November 20, 1940

NATIONAL PETROLEUM NEWS

VOLUME 32 CLEVELAND, OHIO NUMBER 47

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TECHNOLOGY DEPT.
NOV 23 1940
DETROIT

West-East Rates May Start Fight

CLEVELAND—Rail rate cuts of 42% from Middle West to East Coast are expected to precipitate a 'battle.' Gulf refiners viewing loss of their eastern markets will fight the proposed cut. Pennsylvania Railroad announces new rates to be effective Dec. 20, without fourth section relief, which will bring refiners in intermediate areas into the fight. Page 13.

Lindley Postpones Madison Trial Date

CHICAGO — Judge Lindley postponed trial date of remaining defendants in second Madison case (jobber contracts) to Jan. 20, 1941. Page 14.

Tanker Rates Zoom

NEW YORK—'Clean' tanker rates have increased 200% in two months. All tonnage is reported on the water, with only three boats of "ancient vintage" in lay-up. Page 13.

'Wasteful' Advertising Attacked by Arnold

"Too many" stations and "wasteful" advertising of gasolines were among the charges hurled at oil companies by Anti-Trust Chief Arnold, speaking before the American Automobile Assn. Such retail marketing practices, he said, result in "gouging" of consumers. Page 21.

A.P.I. PLEDGES AID IN U. S. DEFENSE

CHICAGO—Pointing to oil industry's World War record of service, American Petroleum Institute at its 21st annual meeting pledged "wholehearted co-operation" in national defense plans now. Defense topics keynoted A.P.I. program. President Byles and all officers re-elected; San Francisco selected for 1941 meeting place. Latest refining developments discussed. These and other highlights are discussed in this issue:

"HEAVY-DUTY" MOTOR OILS—Mougey paper on "need" for lube oils to meet severe operating conditions starts debate. Text of paper, page 34; discussion, page 16.

A.P.I. ANSWERS OIL SUIT—Vice President Boyd breaks silence with denial that Institute ever engaged in illegal activity. Full text, page 25.

OIL'S PLACE IN DEFENSE—Completely told by R. E. Wilson, oil defense advisor. Full text, page 28.

PREVENTING TANK TRUCK FIRES—J. F. Winchester, an authority on trucks, presents paper on this subject. Text and illustrations, page 43.

NEWS IN BRIEF...

December motor fuel demand up 6%, Bureau of Mines reports. Page 20.

* * *

Underground storage tanks are 'local problem.' Page 14.

* * *

Lights prevent plant sabotage in refineries and terminals. Page 20.

* * *

Tennessee oil jobber takes wage-hour problem into state court. Page 13.

* * *

Status of non-driver employes to be decided soon. Page 24.

* * *

Texas presents 'united front' for separate oil and gas commission. Page 21.

Mougey paper starts debate over 'heavy duty' motor oils. Page 16.

* * *

Wilcox re-elected chairman of Petroleum Transporters. Page 23.

* * *

ICC sets valuation of $564,654,534 on 52 oil and 'gas' pipelines. Page 23.

* * *

Another reclaimer charged with misrepresentation by FTC. Page 24.

* * *

Texas commission hits Humble Oil plan of proration. Page 14.

* * *

Death takes J. A. Cosden and Jack Vickers. Page 18.

IT TAKES BRODIMATIC PRINTERS

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On stock transfers and customer deliveries, Brodimatic-printed-figures are automatically totaled—accurately registered—and permanently recorded on Verified Delivery Receipts. These sales slips in "controlled-sequence" are gently and legibly printed by the Brodimatic Roller-type Printer—with no shock or damage to the meter. Metered-deliveries, moreover, are never retarded, for the Brodimatic Printer is not meter-driven. Errors, delays and costly adjustments just can't occur.

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COMING MEETINGS

NOVEMBER

Missouri Independent Oil Jobbers Assn., Fourth Annual convention, Hotel DeSoto, St. Louis, Mo., Wed.-Thurs., Nov. 27-28.

DECEMBER

Nebraska Petroleum Marketers Assn., Annual Convention, Fontenelle Hotel, Omaha, Neb., Mon.-Wed., Dec. 2-4.

American Institute of Chemical Engineers, New Orleans, La., Mon.-Fri., Dec. 2-6.

New Jersey Oil Trades Assn., Annual Meeting and Banquet, Robert Treat Hotel, Newark, N. J., Thurs., Dec. 5.

Mid-Continent Oil & Gas Assn., Annual Joint Meeting of Standing Committee on State & Local Taxation, and Standing Committee on Federal Income & Excise Taxation, Hotel Tulsa, Tulsa, Okla., Thurs.-Fri., Dec. 5-6.

Kansas Oil Men's Assn., Convention, Hotel Broadview, Wichita, Kans., Mon., Dec. 9.

Petroleum Electric Power Assn., Heidelberg Hotel, Baton Rouge, La., Thurs.-Fri., Dec. 12-13.

National Asphalt Conference, Dallas, Tex., Mon.-Sat., Dec. 9-14.

South Dakota Independent Oil Men's Assn., 22nd Annual Convention, Coliseum Annex Bldg., Sioux Falls, Iowa, Tues., Wed., Dec. 10-11.

Petroleum Electric Power Assn., 12th Annual Meeting, Heidelberg Hotel, Baton Rouge, La., Thurs.-Fri., Dec. 12-13.

Mid-Continent Oil & Gas Assn., Annual Meeting of General Board of Directors, Tulsa Club Roof, Tulsa, Okla., Mon., Dec. 16.

JANUARY, 1941

SAE Annual Meeting (and Engineering Display), Book-Cadillac Hotel, Detroit, Mich., Jan. 6-10.

Liquefied Petroleum Gas Assn., Eastern Section, Regional Meeting, N. Y., N. Y., Jan. 16-17.

Compressed Gas Manufacturers Assn., Inc., Annual Meeting, N. Y., N. Y., Jan. 20-21.

Oil Trades Assn. of New York, Quarterly Meeting and Dinner, Waldorf-Astoria, New York, Jan. 21.

Northwest Petroleum Assn., Radisson Hotel, Minneapolis, Minn., Jan. 23-24.

FEBRUARY, 1941

Kentucky Petroleum Marketers Assn., 15th Annual Meeting and Convention, Brown Hotel, Louisville, Ky., Feb. 11-12.

North Texas Oil & Gas Assn., Wichita Falls, Tex., Feb. 22.

Liquefied Petroleum Gas Assn., Inc., Annual Convention, Chicago, Ill., Feb. 24-25.

Iowa Independent Oil Jobbers Assn., Des Moines, Ia., Feb. 26-28.

American Petroleum Institute, Division of Production, Southwestern District, Washington-Youree Hotel, Shreveport, La., Feb. 27-28.

MARCH, 1941

Ohio Petroleum Marketers Assn., Deshler-Wallick Hotel, Columbus, Ohio, March 4-6.

American Society for Testing Materials, Hotel Mayflower, Washington, D. C., March 3-7.

National Dixie Distributors, Inc., Fort Worth, Tex., March 10.

American Petroleum Institute, Division of Production, Spring Meeting, Pacific Coast District, Biltmore Hotel, Los Angeles, Calif., March 11.

Indiana Independent Petroleum Assn., 1941 Spring Convention & Refiners' & Suppliers' Exhibit, Hotel Severin, Indianapolis, Ind., March 11-13.

Oil Burner Institute, Progress Exhibition, Commercial Museum, Philadelphia, Pa., March 17-22.

Oil Trades Assn. of New York, Annual Meeting, Waldorf-Astoria, New York, March 25.

APRIL, 1941

American Assn. of Petroleum Geologists, 26th Annual Meeting, Rice Hotel, Houston, Tex., April 2, 3 and 4.

American Chemical Society, St. Louis, Mo., April 7-11.

American Petroleum Institute, Division of Production, Wm. Penn Hotel, Pittsburgh, Pa., April 17-18.

Petroleum Industry Electrical Assn., Tulsa, Okla., April 23-25.

Natural Gasoline Assn. of America, Annual Convention, Baker Hotel, Dallas, Texas, April 23-25.

National Petroleum Assn., semi-annual meeting, Hotel Cleveland, Cleveland, O., April 24-25.

NATIONAL PETROLEUM NEWS

NOVEMBER 20, 1940

NEWS

A.P.I. Denies Anti-Trust Suit Charges, Pledges Aid in National Defense 13
Tennessee Jobber Takes Wage-Hour Complaint Into Court 13
Rails Plan to Reduce Rates on Fuel Oil from Mid-West to East Coast 13
Requirement of Underground Storage is Matter for Local Authorities, Says War Secretary Stimson... 14
Oil Groups Set Up to Plan Defense Against Sabotage 14
Three Refining Developments Discussed at A.P.I. Meeting 15
Wider Use of 'Heavy-Duty' Oils Indicated by Discussion at A.P.I. Meeting 16
Texas Groups Seek New Oil and Gas Commission.. 20
Death Takes Two Prominent Oil Men, Cosden and Vickers 20
Madison Trial Dates Postponed by Judge Lindley.. 20
Arnold Hits Oil Marketing Practices at A.A.A. Convention 21
Wilcox Re-Elected Head of Oil Transporters at A.T.A. Convention in Los Angeles..... 23
Louisiana Votes to Ban Local Gasoline Taxes..... 24

AT THE A.P.I.

A.P.I.'s Relationship with Oil Industry Outlined By Executive Vice-President—by W. R. Boyd, Jr. 25
Synthetic Hay for Our War Horses—by Robert E. Wilson 28
Heavy Duty Motor Oils—by H. C. Mougey..... 34
Automatic Fire Prevention for Trucks—by J. F. Winchester 43
Oil Industry Ready for Defense, says Col. T. H. Barton 45

MARKETS

Mid-Continent 47
Mid-Western 47
Gulf 47
California 47
Pennsylvania 47
Atlantic Coast 47
Refinery Tank Car Markets 48, 49
Seaboard Markets ... 50
Tank Wagon Markets 51, 52
Crude Oil Markets 53, 54

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Published every Wednesday by The National Petroleum Publishing Co.

WARREN C. PLATT, *Editor and Publisher*
V. B. GUTHRIE, *Managing Editor*

Member of Audit Bureau of Circulation and Associated Business Papers Inc.

Publication office: 1213 W. Third St., Cleveland, Ohio, U.S.A. Telephone, CHerry 7672. Cable Address PLATTOIL, Cleveland. Cable inquiries are answered by mail unless subscriber advances sufficient funds in American money to cover our cable costs.

NEWS BUREAUS

New York, 50 W. 50th Street, Telephone Columbus 5-1516 and 5-1517.

Washington, D. C., 1002 National Press Bldg., Telephone, NAtional 0654.

Tulsa, Okla., 904 World Bldg., Telephone, 3-7132.

Los Angeles, 610-A Hillstreet Bldg., 815 South Hill Street, Telephone, VAndike 2845.

Chicago, Buckingham Bldg., 59 E. Van Buren Street, Telephone, Harrison 5901-2-3.

Subscription rate $3 per year in United States and Mexico; $4 in Canada; $4.50 Foreign Countries. Current copies 10 cents, except special issues; back copies more than two months old 20 cents per copy.

THIS WEEK WITH NPN

18 PAGES OF A.P.I.

With five NPN staff men at the A.P.I. annual meeting in Chicago, we give you in this issue complete coverage of news developments, plus texts of several more papers, including addresses by Executive Vice-President Boyd and Oil Defense Advisor Wilson.

"Heavy-duty" motor oils continue to be a topic of much interest. In addition to text of paper by H. C. Mougey, General Motors engineer, this issue reports the discussion which followed the Mougey paper at the A.P.I. meeting.

MID-WEST TO EAST RATE

Railroads' plan to reduce rates on fuel oil from Mid-Western refineries to East Coast looms as an important factor in eastern fuel oil markets. It is *not* a fourth section application, so lower rates to Ohio and other intermediate points may also draw fire from refiners in these states. Page 13.

ARNOLD AND PRICES

In a speech before the American Automobile Assn., Anti-Trust Chief Arnold contends that "wasteful advertising" is gouging the gasoline consumer. He also hits "too many" stations.

JOBBER FIGHTS BACK

A Tennessee jobber's answer to an informal complaint by Wage-Hour Division officials was to take the case into state court and thrash the whole matter out before a judge. Out of this may come some indication of whether or not the Wage-Hour Law can be stretched to include local oil marketers. Page 13.

NEXT WEEK

That article on the Pennsylvania Turnpike, telling how service stations operate on a high-speed highway, will be carried next week.

ADVERTISING PAGES REMOVED

You Get SALES ACTION When You Use Petroleum Engineering Bulletins!

• This poster prods your sales force into SALES ACTION by constantly reminding them to keep ASKING every motorist for that profitable lubrication job.

• This poster gets SALES ACTION for you by giving your sales force the engineering facts and data they can use in building sales talks and demonstrations.

Petroleum Engineering Bulletin
PUBLISHED BY NATIONAL PETROLEUM NEWS
For Full Protection
LUBRICATE EVERY 1000 MILES
In Winter's Zero Cold change Engine Oil every 500 miles or once a month
HERE IS WHAT THE ENGINEERS SAY:

• This poster means more SALES ACTION because it reminds you of the need of putting maximum sales punch into your lubrication sales force—every day.

•This poster inspires SALES ACTION by giving your employees the engineering recommendations of "outside authorities" to back up your own lubrication campaigns.

YES, NPN's Petroleum Engineering Bulletins get you SALES ACTION from your employees. It teaches and educates your sales personnel by giving them authoritative engineering facts they can use in talking and selling lubrication. At the same time, by displaying this poster in service stations, lubritoriums, offices and sales rooms, it constantly reminds them to ASK every motorist for that profitable conditioning job.

Then, too, this poster hung on the wall in front of YOUR own desk will be a constant sales reminder to you of the need of daily and hourly keeping the sales enthusiasm and activity of your selling force at its highest pitch.

These colorful posters are printed in three colors and are 27 inches by 40⅞ inches in size. Illustrations and charts graphically point out "reasons why" it is important to lubricate at certain mileage points. Easy-to-understand and use, the facts on NPN's Petroleum Engineering Bulletin will educate, teach and remind your selling force to keep selling and talking lubrication. It is designed to HELP them sell . . it will INCREASE your sales. Order your supply today so you can start cashing in.

Prices of Posters

1 to 25 signs	25c each
26 to 50 signs	23c each
51 to 100 signs	21c each
101 to 500 signs	17c each
501 to 1000 signs	15c each
1001 and up—rates on application	

Remittance must accompany orders for 25 signs or less. Ohio purchasers please add 3% state tax. Signs sent postpaid.

Send for a Sample

Test a Petroleum Engineering Bulletin in your office or service station for a day or two. Bulletin specially handled and wrapped in mailing tube, for trial, only 50c each.

NATIONAL PETROLEUM NEWS, b
1213 W. Third St., Cleveland, Ohio

Enclosed is check covering our order below .....

Send us invoice covering our order below.....

Send us ..... Petroleum Engineering Bulletins.

Send us ..... special sample posters at 50c each.

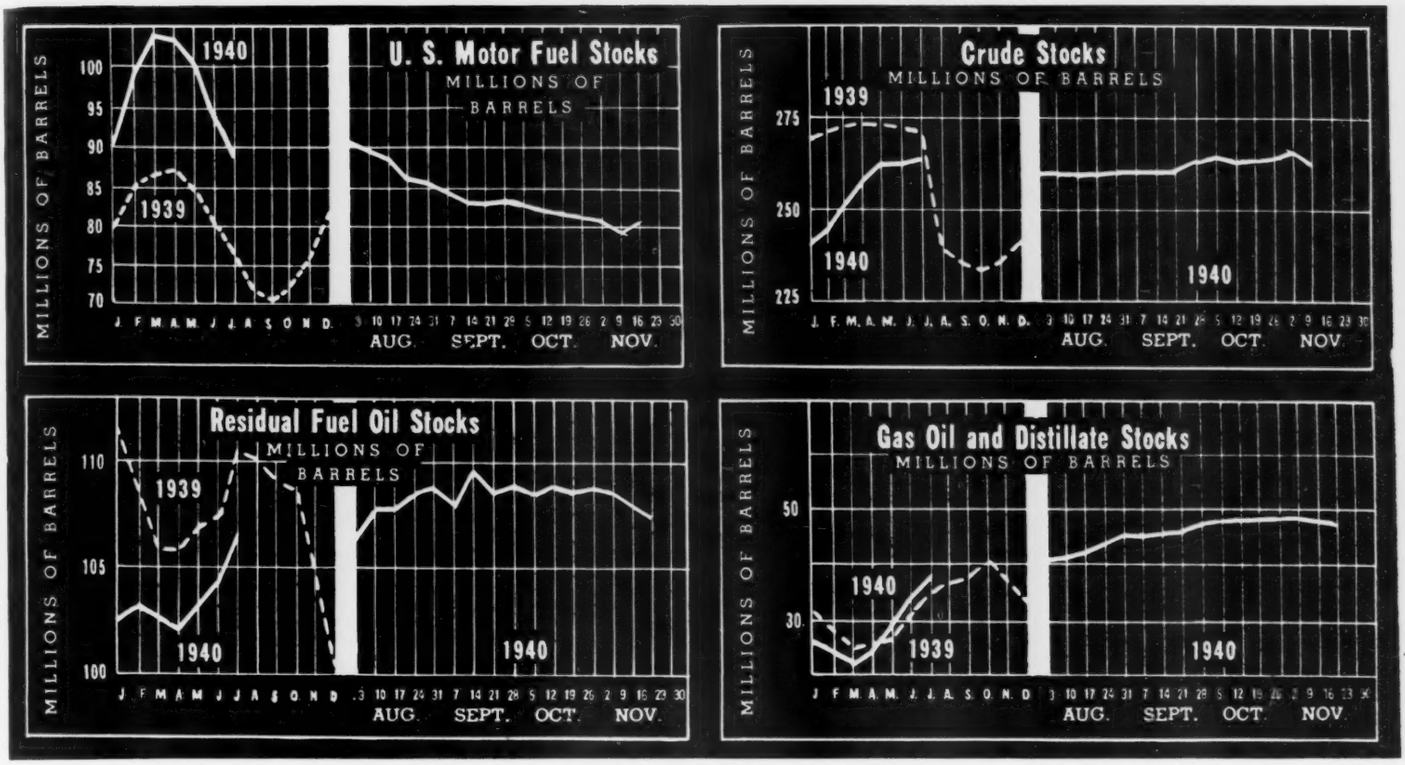
Name .....

Company .....

Street Address .....

City and State.....

LATEST OIL INDUSTRY
· STATISTICS ·



A. P. I. Weekly Refinery Report

(Figures in Thousands of Barrels of 42 Gallons Each)

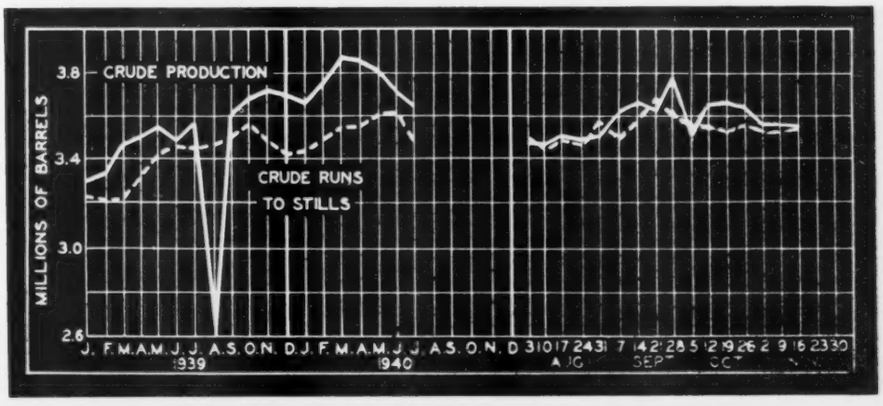
Districts	Daily Average Crude to Stills Week Ended		Per Cent of Reporting Capacity Week Ended		†Gasoline Production Week Ended		Total Stocks Finished and Unfinished Motor Fuel‡ Week Ended		Total Stocks of Gas Oil & Distillates Week Ended		Total Stocks of Residual Fuel Oil Week Ended	
	Nov. 16	Nov. 9	Nov. 16	Nov. 9	Nov. 16	Nov. 9	Nov. 16	Nov. 9	Nov. 16	Nov.9	Nov. 16	Nov. 9
East Coast	543	543	84.4	84.4	1,503	1,459	18,148	18,719	17,452	17,255	12,114	12,579
Appalachian	107	120	75.4	84.5	379	467	3,186	3,205	551	600	389	439
Ind., Ill., Ky.	581	536	86.7	80.0	2,242	2,176	13,747	13,559	5,884	5,978	3,532	3,627
Okla., Kans., Mo.	255	255	78.9	78.9	938	918	6,242	6,151	1,593	1,672	2,213	2,239
Inland Texas	120	119	71.9	71.3	499	479	1,616	1,542	406	399	1,538	1,524
Texas Gulf	866	865	90.7	90.6	2,635	2,630	12,718	12,518	8,555	8,739	8,871	8,884
La., Gulf	127	116	79.4	72.5	360	271	2,529	2,399	1,449	1,390	1,843	1,624
No. La., Ark.	46	42	88.5	80.8	135	126	417	433	340	338	537	562
Rocky Mt.	47	48	69.1	70.6	256	259	913	872	131	131	432	413
California	510	525	69.9	71.9	1,394	1,432	15,267	15,379	10,652	10,766	73,827	73,926
Total Reporting	3,202	3,169	81.9	81.0	10,341	10,217	74,783	74,777	47,013	47,268	105,296	105,817
U. S. Total**	3,540	3,510	....	....	11,666	11,502	80,063	79,847	48,108	48,408	107,151	107,687
U. S. Total 11-16-39**	3,497	...	....	....	12,209	.....	75,170	.....	38,917	.....	112,054	.....

†Includes straight-run, cracked and natural blended. ‡Includes stocks at refineries, in bulk-terminals, pipe lines and in transit. §12% of reporting capacity in this district did not report gasoline production. **Estimated, U. S. Bureau of Mines basis.

Crude Oil Production for the U. S.

(American Petroleum Institute figures)

	WEEK ENDED Nov. 16 Barrels	Nov. 9 Barrels
Oklahoma	399,900	394,050
Kansas	192,200	168,950
Nebraska	2,200	2,350
Texas	1,300,550	1,347,250
Louisiana	282,400	280,000
Arkansas	69,300	69,400
Mississippi	16,100	14,650
Illinois	343,150	338,700
Indiana	19,450	19,950
Eastern (Ill. and Ind. excluded)	87,650	87,100
Michigan	47,350	47,500
Wyoming	72,600	75,800
Montana	18,050	18,050
Colorado	3,400	3,400
New Mexico	100,850	101,450
California	621,400	615,600
Total U. S.	3,576,550	3,584,200
Crude Imports	106,860	110,140
Total New Supply	3,683,410	3,694,340



Intensive Lubrication Drive in Full Swing!

An aggressive editorial campaign waged by National Petroleum News has done much to stimulate lubrication business at service stations this season. This drive, featuring the slogan "For Full Protection, Lubricate Every Thousand Miles," has met with great enthusiasm in the field.

JOIN THE DRIVE

Cash in by giving your customers the extra protection of Heat-Proved Motor Oils!

Why not take full advantage of the splendid opportunity to profit from this aggressive lubrication promotion? If you sign up to handle Koolmotor and Cities Service Motor Oils, you'll be able to offer your customers *extra* lubrication protection, because both these fine motor oils are *heat proved*. That means that they have withstood higher degrees of heat at the refinery than they ever will have to bear as an engine lubricant. Thus with heat-proved Koolmotor and Cities Service Motor Oils you can offer your customers *complete* protection and *long-lasting* protection, too—help give their cars an "extra year of youth." Write to your nearest Cities Service office immediately.

CITIES SERVICE OIL COMPANIES

CITIES SERVICE OIL COMPANY—Chicago, New York, Cedar Rapids, Boston, St. Paul, Grand Forks, Kansas City, Fort Worth, Oklahoma City, Milwaukee, Cleveland, Detroit, Syracuse, Harrisburg.

CITIES SERVICE OIL COMPANY, LTD.—Toronto, Ontario.

ARKANSAS FUEL OIL COMPANY—Shreveport, Little Rock, Jackson, Birmingham, Atlanta, Charlotte, Nashville, Richmond, Miami.

· STATISTICS ·

N.P.N. Gasoline Index

	T.W. Dealer	Car Tank
	Cents Per Gallon	
Nov. 18	8.71	5.03
Month ago	8.67	5.11
Year ago	9.63	6.23

Dealer index is an average of "undivided" dealer prices, ex-tax, in 50 cities.

Tank car index is a weighted average of 9 wholesale markets for regular-grade gasoline.

Weekly Changes in Crude Oil Stocks*

(Thousands of barrels)

Grade or origin	Nov. 2	Nov. 9	Change from Nov. 2
Pennsylvania Grade	4,656	4,643	— 13
Other Appalachian	1,390	1,400	+ 10
Lima-Michigan	1,475	1,465	— 10
Illinois-Indiana	19,488	19,690	+ 202
Arkansas	3,717	3,649	— 68
Kansas	8,459	8,442	— 17
Louisiana:	14,015	14,293	+ 278
Northern (inc. Miss.)	5,559	5,746	+ 187
Gulf Coast	8,456	8,547	+ 91
New Mexico	7,626	7,470	— 156
Oklahoma	63,721	63,655	— 66
Texas:	85,407	84,407	—1,000
East Texas	19,391	18,259	—1,132
West Texas	18,528	18,763	+ 235
Gulf Coast	20,464	20,482	+ 18
Other Texas	27,024	26,903	— 121
Rocky Mountain	15,901	15,664	— 237
California	35,626	34,597	—1,029
Foreign	2,339	2,256	— 83
Total U. S. refinable	263,820	261,631	—2,189
Heavy in California	12,397	12,260	— 137

*As compiled by U. S. Bureau of Mines.

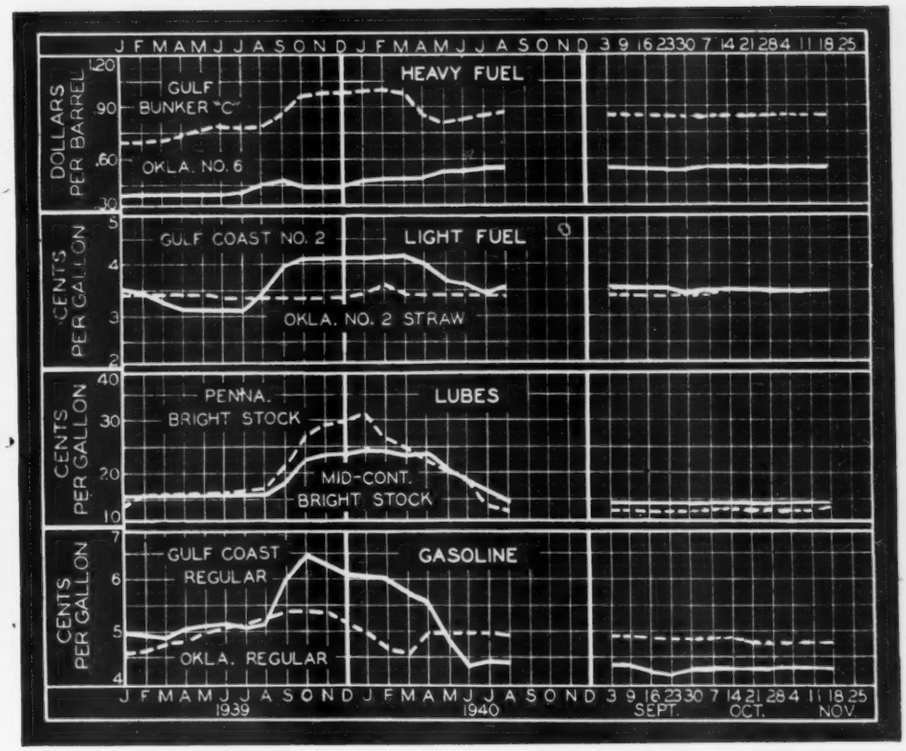
Retail Posted Gasoline Prices At Service Stations in 50 Cities

The following price information is obtained from reliable sources but is not guaranteed. Prices reported in effect as of Nov. 1, 1940.

	Net Dealer Price	Indicated Dealer Margin	Total "Gas" Tax*	Apparent Prvlg. Posted Retail Price Incl. Tax
Portland, Me.	7.1	3.2	5.5	15.8
Manchester	6.6	2.9	5.5	15.0
Burlington, Vt.	6.3	2.5	5.5	14.3
Boston	6.1	2.9	4.5	13.5
Providence	6.7	3.3	4.5	14.5
Hartford	6.5	2.5	4.5	13.5
Buffalo	7.4	3.0	5.5	15.9
New York	6.5	2.0	5.5	14.0
Newark	7.0	3.4	4.5	14.9
Philadelphia	7.5	0.9	5.5	13.9
Dover, Del.	8.0	2.0	5.5	15.5
Baltimore	7.75	4.55	5.5	17.8
Washington	7.5	3.0	3.5	14.0
Charleston, W. Va.	10.05	4.05	6.5	20.6
Norfolk, Va.	9.25	4.55	6.5	20.3
Charlotte, N. C.	7.5	3.5	7.5	18.5
Charleston, S. C.	9.25	4.0	7.5	20.75
Atlanta	7.5	4.0	7.5	19.0
Jacksonville	7.5	4.0	8.5	20.0
Birmingham	8.0	4.0	8.5*	20.5
Vicksburg	8.5	5.0	7.5	21.0
Memphis	9.0	3.8	8.5	21.3
Lexington	9.0	3.5	6.5	19.0
Youngstown, O.	8.0	3.0	5.5	16.5
South Bend	9.8	4.7	5.5	20.0
Chicago	8.1	3.04	4.5	15.64
Detroit	8.1	3.25	4.5	15.85
Milwaukee	9.8	4.1	5.5	19.4
St. Paul-Minneapolis	9.7	4.0	4.5	18.2
Fargo, N. D.	11.2	3.5	5.5	20.2
Huron, S. D.	10.5	4.0	5.5	20.0
Omaha	9.4	3.5	6.5	19.4
Des Moines	9.4	4.0	4.5	17.9
St. Louis	8.7	3.2	4.5*	16.4
Wichita	7.8	3.5	4.5	15.8
Tulsa	7.0	2.5	5.5	15.0
Little Rock	8.0	4.0	8.0	20.0
New Orleans	7.75	5.25	8.5	21.5
Houston	7.0	4.0	5.5	16.5
Albuquerque	9.0	4.5	7.0**	20.5
Denver	9.0	4.0	5.5	18.5
Casper, Wyo.	11.0	5.0	5.5	21.5
Butte, Mont.	9.0	4.0	6.5	19.5
Boise, Idaho	12.0	4.0	6.6	22.6
Salt Lake City	10.5	4.0	5.5	20.0
Reno, Nev.	11.0	4.0	5.5	20.5
Phoenix, Ariz.	11.0	4.0	6.5	21.5
San Francisco	9.0	4.0	4.5	17.5
Portland	9.5	4.0	6.5	20.0
Spokane	11.0	4.0	6.5	21.5
Average 50 Cities	8.58	3.63	5.9	18.1*

*Includes 1c City Tax. **Includes 0.5c City Tax.

REFINERY TANK CAR PRICES



Movement of Crude Oil and Refined Products To Eastern Ports in the U. S.

(Thousands of barrels)

	September 1940	August 1940	September 1939	January-September 1940	January-September 1939
California to the East-Gulf coast:					
Crude	72	115	217	494	857
Gasoline	268	531	309	2,906	2,902
Kerosine	54	40	...	94	264
Gas oil, etc.	182	...	84	464	314
Residual fuel oil	155	77	209	566	1,869
Miscellaneous	142	74	8	645	466
Total	873	837	827	5,169	6,672
Gulf to East coast[1]:					
Crude	11,656	13,402	12,177	123,131	115,298
Gasoline	10,024	10,850	9,160	88,741	86,310
Kerosine	2,072	1,690	1,806	18,994	15,814
Gas oil, etc.	2,684	2,437	2,319	31,344	23,972
Residual fuel oil	5,708	4,134	4,629	50,641	45,849
Lubricants	591	616	548	5,552	4,581
Miscellaneous	3	113	21	484	405
Total	32,738	33,242	30,660	318,887	292,229
Foreign crude to East coast:					
Mexico	450	779	205	3,602	882
Trinidad and Colombia	...	...	...	170	933
Venezuela	2,392	2,522	2,445	20,743	19,669
Total	2,842	3,301	2,650	24,515	21,484
Foreign crude to Gulf coast:					
Mexico	975	852	434	4,936	2,751
Colombia	...	...	...	182	...
Venezuela	95	70	...	625	301
Total	1,070	922	434	5,743	3,052

[1] From Petroleum Conservation Division, Department of the Interior.

Shipments of Motor Fuel by Pipe Lines

(Thousands of barrels)

	September 1940	August 1940	September 1939[1]	January-September 1940	January-September 1939[1]
Motor fuel turned into lines	9,250	8,806	7,535	70,965	69,821
Motor fuel delivered from lines	9,072	9,429	7,640	71,062	69,731
Shortage	52	50	42	507	204
Stocks in lines and working tanks end of month	4,651	4,525	3,213	4,651	3,213

[1] Inter-company deliveries eliminated Jan. 1, 1940.

'Bill' Boyd Presides at 21st Annual A.P.I. Meeting in Chicago

● When William R. Boyd, Jr., executive vice president of the American Petroleum Institute, presided at the 21st annual meeting of the Institute last week in Chicago, it marked his 20th year with the organization. It's a safe bet that few—if any—of the 3000 oil men attending would have needed an introduction to "Bill" Boyd.

Admitted to the Texas bar at 19, "Bill" was mayor of Teague, Texas, at 21—and its first citizen ever since. After several years as banker and lawyer in Teague, several more in association work at Washington, he joined the A.P.I. shortly after it was formed in 1920.

Presiding at A.P.I. meeting, Mr. Boyd gave the Institute's first answer to government's pending anti-trust suit in which it, and 22 major oil companies, are defendants:

"Believe me when I say to you, without equivocation or mental reservation, that the American Petroleum Institute has not and is not now engaged in conducting any illegal or collusive activity. Nor do we believe that by any stretch of fact it can be proved by competent testimony in any court of justice that the Institute has ever so engaged. I believe the Institute is observing scrupulously all legal restrictions."

A.P.I. Highlights in This Issue

A.P.I. re-elects President Byles and all officers; San Francisco picked for 1941 annual meeting 13

* * *

Three developments discussed at refining sessions, including azeotropic distillation 15

* * *

Mougey paper on "heavy duty" motor oils starts debate, with oil engineers objecting 16

* * *

Full text of "heavy duty" oils paper by H. C. Mougey, of General Motors 34

* * *

Editor Platt muses on Oil's future as A.P.I. speakers discuss industry's role in war 17

* * *

A.P.I.C. exhibit seen by 3000 at Institute's meeting 18

* * *

25-Year Club meets, elects W. G. Skelly as 1941 president 21

* * *

Full text of Vice President Boyd's opening address including answer to anti-trust suit 25

* * *

Full text of "Synthetic Hay for Our War Horses," by Dr. R. E. Wilson, oil defense advisor 28

* * *

J. F. Winchester's paper discussing automatic fire prevention for tank trucks 43

* * *

Col. T. H. Barton points out how Oil is best prepared of any industry to serve U. S. 45

NATIONAL PETROLEUM NEWS

VOLUME 32 WEDNESDAY, NOVEMBER 20, 1940 NUMBER 47

Rails May Cut Rates, Middle West to East

N. P. N. News Bureau

CLEVELAND, Nov. 19.—The Pennsylvania Railroad has announced that it will put into effect Dec. 20 new reduced rail rates for crude and fuel oils, including residual and distillates from the Middle West to the eastern seaboard. The road will not seek Fourth Section relief, an official said.

N. P. N. News Bureau

CLEVELAND, Nov. 18.—Proposal of sharply-reduced rail rates on crude and fuel oil, from the Middle West to the eastern seaboard, is expected to arouse vigorous opposition.

Independent refiners on the Gulf view the proposed rate cuts as a threat to their markets. Other refiners in intermediate territory have indicated that they are opposed to the rates, and may petition the Interstate Commerce Commission for a hearing.

Representatives of the coal industry also have indicated that they will oppose the institution of the new rate structures.

Meanwhile, tanker rates from the Gulf to the eastern seaboard continue to rise, with a 65c charter for No. 2 oil reported. This is 8c per bbl. below the all-time high fixture made late in January of this year.

42% Cut on Fuel Oil

In a letter stating that railroads were going ahead with publication of the rate reductions which total slightly more than 42% on the total movement, A. C. McIntyre, freight traffic manager, Lehigh Valley Railroad, added that rails would not seek fourth section relief, and that rates "would apply from intermediate origins to intermediate destinations."

The proposed rates, which are on the basis of 15% of first class rates, compared with present rates of 26% of first class, would apply on shipments from St. Louis, Chicago and intermediate points to the eastern seaboard points of New York, Philadelphia, Baltimore and Norfolk, Va., and points intermediate to these coastal cities.

Following is a schedule of old and proposed rates for crude and fuel, including residual and distillate oil, in cents per bbl. and per hundredweight.

	Present Rates		Proposed Rates	
	Per Cwt.	Per Bbl.	Per Cwt.	Per Bbl.
Chicago to:				
New York	40c	$1.243	25c	77.7c
Philadelphia	42	1.305	24	74.6
Baltimore	40	1.243	23	71.4
St. Louis to:				
New York	48	1.491	28	87
Philadelphia	46	1.429	26	80.8
Baltimore	44	1.367	25	77.7

It was pointed out that if the proposal was merely for

(*Continued on page* 24)

Tanker Rates Advance 200% In 2 Months

N. P. N. News Bureau

NEW YORK, Nov. 19.—Demand for oil in industrial areas along the eastern seaboard has put all available American tanker tonnage into coastwise service. Only 3 boats, said to be of "ancient vintage", are in lay-up, according to reports.

Major company boats are generally busy moving oil for their owners, and interest in the independently owned tankers is high, it is said. Available tonnage for open charter is scarce, and it is virtually an impossibility to take a time charter on either "clean" or "dirty" tonnage, according to boat men here.

"Clean" coastwise tanker rates have jumped over 200%, "dirty" rates over 150%, in the past two months. During the same two months of 1939, when tanker rates were climbing toward the high of 72c reached for No. 2 fuel, "clean" rates increased 60%; "dirty" rates, 44%.

Last paid for gasoline was 57c; kerosine, 61c; No. 2 fuel, 65c; up 11c per bbl., basis of gasoline, during the past week. Three "dirty" boats were reported fixed at 45c for 30 gravity or lighter crude, 48c for 20-29.9 gravity fuel, and 51.5c for 10-19.9 gravity fuel, representing increase of 5c per bbl., basis light crude, during the past week.

Opinion was divided among boat men here today as to what might be expected in the way of rates in the future. Some said they thought rates were "pretty near the top." Others said they thought rates would continue to advance, but that the increases would come in smaller amounts and would be spaced farther apart. Still others said they could see nothing which would tend to halt a fairly rapid advance. The latter pointed out that besides the increased demand for oil because of national defense preparations, "we really haven't had any winter weather yet." One boat man said he "couldn't even guess" what might happen to rates if the major companies found it necessary to go into the open market for additional boats.

A few Norwegian-flag tankers, presumably under British control, have been released for South-North American runs during the past few weeks. Rates on these runs have also shown marked increase. Last reported was fixture of 2 Norse tankers, each for 2 consecutive voyages from Aruba, Curacao or Venezuela to N-Hatteras at 38c for 20 gravity or lighter fuel, 40c for 15 gravity or lighter, and 42c for 10 gravity or lighter. Two months ago, boats were fixed for this run at 20c.

Oil Marketer Takes Wage-Hour Threats To Tennessee Court

N. P. N. News Bureau

CLEVELAND, Nov. 16. — Thoni Oil Co., Nashville, Tenn., informally cited by Wage-Hour Division for alleged unpaid minimum wages and overtime compensation, has asked the state court for a declaratory judgement defining rights and liabilities of both the company and employes under the Wage-Hour law.

The seven employes involved, the company contends, worked less than half-time loading, unloading and driving trucks, and the balance helping other employes in the retailing of gasoline at its stations, and therefore are exempt from wage-hour law.

The company's complaint states that the Wage-Hour Division maintains that employes were engaged in "interstate commerce" because they assisted in unloading tank cars, from refineries outside Tennessee, into the underground tanks or, at times, directly into trucks.

A. P. I. Pledges Industry's Aid In U. S. Defense

N. P. N. News Bureau

CHICAGO, Nov. 16.—National defense keynoted the American Petroleum Institute's annual meeting here the past week, from subcommittee meetings to general sessions highlighted by addresses of Dr. Robert E. Wilson, oil advisor to national defense commission, and Congressman Martin Dies of Texas.

More than 3000 oil men attended A.P.I. sessions, with official registration at 3060 as compared with 3120 last year. Record was 3144 at Los Angeles in 1935.

A.P.I. will return to West Coast for its 1941 annual meeting selecting San Francisco, Nov. 3 to 7. Mid-year meeting will be at Tulsa, May 19 to 23.

Pledges Aid in Defense

In a formal resolution, the A.P.I. pledged its "wholehearted co-operation" with the national defense program and pointed with pride "to the record of the petroleum industry during the first World War, publicly records the fact that the petroleum industry as presently constituted under a system of competitive enterprise, in addition to ordinary peacetime requirements, is amply able and willing to meet any demand which the United States government may make upon it for petroleum products for any and all needs for defense or war purposes, and desires to cooperate fully with all governmental agencies."

Another resolution backed the oil compact plan and urged that all producing states join.

Oil and Defense Ties Told

"Petroleum industry is in best position of any basic industry to serve her country in defense," declared Col. T. H. Barton, Lion Oil Refining Co., at first general session.

Dr. Wilson gave a complete picture of the industry's role in national defense. He predicted also that increased demand for defense would offset loss of export markets due to the war.

Opening the first general session, Executive Vice President Boyd broke silence of the A.P.I. on the anti-trust in which the Institute and 22 major oil com-

(*Continued on page* 14)

panies are named defendants. Mr. Boyd detailed activities of the Institute from its birth after the World War to date, declaring solemnly that at all times the A.P.I. had stayed within legal restrictions imposed on trade associations.

(More complete discussion of the above A.P.I. addresses is carried elsewhere in this issue. —EDITOR)

Dangers of sabotage to industrial plants were vividly portrayed by Congressman Dies who cited official records to show extent of "fifth column" activity in the U. S.

Second day's general sessions, in addition to Congressman Dies' speech, featured an address by H. W. Prentis, Jr., of National Assn. of Manufacturers, who asked that the government give industry a "fair deal".

"Today, with the defense emergency upon us," he declared, "industry asks from government a fair deal instead of the shabby deal of recent years; faith instead of suspicion; active governmental sympathy and support instead of demagogic criticism; statesmanship instead of politics."

"No private business enterprise would consider for a moment operating on the basis under which the patriotic members of the National Defense Advisory Commission are now forced to function," he added. "An executive head with real authority to coordinate the work of the Commission, to enforce its decisions, to cut through government red tape, to standardize specifications, and thus make possible the full benefit of mass production methods, should be appointed at once."

Sandwiched between Prentis and Dies on the program, was an inspirational talk by W. J. Cameron, Ford Motor Co., Detroit.

President Axtell J. Byles and all other officers were re-elected. Two changes were made in the executive committee, H. D. Collier, president of California Standard, succeeds the late W. H. Berg of the same company, while Reese Taylor, Union Oil Co. of California, replaces L. B. Simmons, Rock Island Refining Co., Duncan, Oklahoma.

Two changes were made in membership of American Petroleum Industries Committee, the other members being re-elected. L. A. Gibbons, Union Oil Co. of California, was elected to succeed Paul M. Gregg of same company, resigned. Buell S. Jones, Indiana Standard, succeeds the late W. J. Cuthrie, Gulf Oil Corp.

Seven new directors were named to fill vacancies among directors. They were: C. L. Henderson, Vickers Petroleum Co., Wichita, Kans.; W. L. Childs, Reed Roller Bit, Los Angeles; Percy C. Jones, of The S. M. Jones Co., Toledo; Ralph B. Lloyd, of Lloyd Corp., Los Angeles; Parker Melvin, Pennsylvania Grade Crude Oil Assn., Bradford, Pa.; A. S. Russell, California Standard, San Francisco, and Henry L. Phillips, Sinclair Prairie Oil Co., Tulsa.

Highlights of important papers and meetings are told on this and subsequent pages including complete texts of several papers.

'Big Three' at First General Session of A.P.I. Meeting

Members attending the first general session of the American Petroleum Institute's 21st annual meeting last week in Chicago, heard addresses by these three men, left to right: William R. Boyd, Jr., Robert E. Wilson and T. H. Barton

Waste Water Separator Standardized by A.P.I.

CHICAGO, Nov. 16.—Among accomplishments of technical committees of the American Petroleum Institute at the annual meeting in Chicago Nov. 11-15 was the completion of a revised third edition of Section 1 of "Disposal of Refinery Wastes" which includes specifications for a gravity-type waste-water separator of new design. The new separator will be similar in many respect with the design of a model described by W. B. Hart, The Atlantic Refining Co., at the 1938 Mid-Year meeting of the A.P.I. Mr. Hart has been one of the most active of the Committtee on Disposal of Refinery Wastes. The new edition of Section 1 will be announced later.

The committee is headed by J. S. Hess, Sinclair Refining Co., with D. V. Stroop, secretary.

Madison Trials Are Postponed

N. P. N. News Bureau

CHICAGO, Nov. 16.—Date for trial of remaining defendants in second Madison oil case (jobber contracts) has been set for Jan. 20, 1941 at Madison, Wis., before Federal District Judge Lindley, Danville, Ill.

Defendants granted new trials in first Madison (buying programs) will be brought to trial at Madison, also before Judge Lindley, on April 14, 1941.

Trial of the second case had been set for Nov. 18, while retrials in the first case were to come up Jan. 20, 1941. Government asked for postponement due to illness of one government attorney. Hearing was held here Nov. 13 before Judge Lindley on this request, which was unopposed.

Judge Lindley denied a motion by Bethuel Webster, Tide Water Associated Oil Co. attorney, to put off further proceedings in the Madison cases and in the West Coast suit until the anti-trust oil suit, filed in Washington, D.C., on Sept. 30, is tried. Mr. Webster argued that the new oil suit, naming 22 major companies among defendants, covered all the charges in all pending suits. Government counsel pointed out that this latest suit was civil action while others were indictments, contending that it wouldn't be fair to let remaining defendants off after others had been convicted or plead *nolo contendere*.

Texas Commission Hits Humble Plan

Special to N. P. N.

AUSTIN, Nov. 18. — Texas Railroad Commissioners and Hines Baker, attorney for Humble Oil and Refining Co., clashed today over so-called Humble plan of proration, each claiming the other's policies will result in collapse of the oil industry.

The so-called Humble plan was presented by H. C. Weiss, president, who urged that (1) state's output be maintained within Bureau of Mines estimated demand; (2) application of equable yardstick in field allowables; and (3) equable allocation of market for special crudes among all pools that can supply it.

Institute of Petroleum Has Sixth Annual Dinner

CHICAGO, Nov. 16.—The American section of the Institute of Petroleum held its sixth annual meeting and dinner Nov. 13, 1940, during the annual meeting of the American Petroleum Institute. Guest speaker was Dr. T. A. Boyd, General Motors Corp. Dr. Gustav Egloff, Universal Oil Products Co., was master of ceremonies. Dr. Boyd described and illustrated with slides the mechanical inventions used on the modern automobile, which had been made during the 150 years prior to the coming of the automobile.

Three Refining Developments Described at A.P.I. Sessions

N. P. N. News Bureau

CHICAGO, Nov. 15. — Advances in three separate phases of petroleum refining were disclosed at the annual meeting of the American Petroleum Institute here this week.

The first is an improvement in the thermal cracking process, by which half of the gasoline sold at service stations in recent years has been produced, resulting in further improvement in the anti-knock value of motor fuel.

The second advance has to do with lubricating oil manufacture and is a completely new manufacturing process for the separation of oil from crystalline waxes. The new process replaces equipment several times its size and makes the processing time a matter of minutes, rather than of days.

The third advance is, strictly speaking, not so much an advance in refining methods as an indication of a trend in the refining division of the petroleum industry. This trend is the entrance of petroleum refiners into the chemical industry using refinery waste products as raw materials for the manufacture of chemicals such as alcohols, ketones, and ammonia.

Fourth Advance Seen

Possibilities for a fourth advance in refining methods were suggested also, but the indications were that the method has been used so far only in laboratory. The method proposed is an improved means for separating hydrocarbons whose boiling points are so close together as to make separation by conventional distillation methods impossible or impractical.

In addition to advances in refining methods, the refining division was told also of the use of a chemical derived from soy beans which prevents formation of haze and deposits in gasoline pump bowls and decreases corrosion of storage-tank bottoms, galvanized drums and aluminum aviation-gasoline tanks. A paint engineer presented data indicating that a new "self-cleaning" white paint developed by his company, when used on gasoline storage tanks, reduced evaporation losses to even less than when aluminum paint is used. While reduction of evaporation loss was not discussed by the speaker, it is a natural result of lowered temperatures recorded in storage tanks painted with the new white paint. Lowered temperature is the result of better reflection of the sun's heat.

The new cracking process referred to above is known as the Polyform process and combines thermal cracking or reforming with thermal gas polymerization. Most of the new processes, such as polymerization, when used in conjunction with cracking operations, provide more than merely additive improvement, but, when fully combined, as in the Polyform process, it has been found possible to elevate octane levels materially and provide economies well above those obtainable by conducting the processes separately, it was pointed out by Dr. E. R. Smoley, The Lummus Co., who presented the paper. Other joint authors of the paper are J. E. Bogk, Phillips Petroleum Co., and P. Ostergaard, Gulf Oil Corp. High yields of motor fuels with octane and numbers ranging from 70 to 80 by the CFR-ASTM method were said to be obtained from gas reversion and polyform operations.

Equipment and operation of these units, as well as the distillate treating, were said to be conventional and similar to thermal cracking. Commercial operations extend over 4 years, with 10 units now operating and 2 units under construction, which altogether will process 55,000 bbls. per day of naphtha and outside propanes and butanes.

Current realizations from naphtha-gas revision and naphtha polyform units were said to show that the payout period on the investment for these processes is from one to two years due to increased gasoline yield and saving in tetraethyl lead.

Wax De-Oiling Process

The emulsion de-oiling process for the separation of oil and waxes utilizes water emulsions to effect continuous separation in a specially designed centrifuge of large size. Two plants of this type have been put into commercial operation during the past year, one of 400 bbls. per day capacity and the other 700 bbls. The larger of the 2 employs a centrifuge 5 feet in diameter. Although the application of the principle permits separation of any clean oil-wax mixture, the commercial development of the process thus far has been confined to the de-oiling of sweater stocks.

A. H. Schutte, The Lummus Co., pointed out in presenting the process, that, unlike most refining processes, the separation of oil from crystalline waxes by conventional sweating has not been changed radically in past years. The efficiency of sweating has been increased, but it was said to be practically without competition in its field.

Sweating is still a batch fractional melting, carried out on long time cycles, thermally inefficient and relatively difficult to control, Mr. Schutte said. The new process offers the advantages of continuous operation under automatic control, low operating cost, and low plant cost.

Particular attention was called to the fact that the use of water emulsions means no expensive solvents nor solvent-recovery equipment is required. The solvent dewaxing processes began replacing wax sweating of crystalline wax and Sharples centrifuging of amorphous wax in 1927 and the process appeared so favorable to Walter Miller and H. G. Osborn, Continental Oil Co., writing for "The Science of Petroleum", published in 1938, that they said "it is generally thought that all future new dewaxing installations will be of the solvent type."

Petroleum Chemical Industry

The growth of a chemical industry using petroleum and natural gas as raw materials was said to be one of the major developments of the past decade. C. W. Humphreys, superintendent of one of the Shell Chemical Co. plants, who presented a paper by L. Rosenstein of the same company, said Shell's production of ammonia had increased from 4500 tons in 1931 to 27,000 tons in 1939 and that solvent manufacture had grown from 90,000 to 57,000,000 lbs. during this period. A continually increasing variety of chemicals is being made available at constantly decreasing cost from refinery gases that formerly were used only as furnace fuel.

The entrance of the petroleum industry into the field of synthetic chemicals has had a profound influence upon the development of synthetic gasolines, it was asserted. Development of iso-octane, the 100-octane hydrocarbon, for example, was associated closely with that of secondary butyl alcohol. Other similarly close relationships may be expected as petroleum chemicals play an increasingly important part in the economics of the industry, Mr. Rosenstein believes.

The principal uses of the alcohols, ketones, and esters produced by Shell Chemical Co. are as solvents and extractants in the manufacture of lacquers, varnishes, synthetic resins, plastics, synthetic fibers, artificial leather, safety glass, photographic films, printing inks, cosmetics, medicinal preparations, explosives, etc., and also in the dewaxing of mineral oils and extraction of vegetable and animal materials.

Azeotropic Distillation Suggested As Aid to Efficient Fractionation

The alcohols and ketones have found extensive use as base material for chemical synthesis to make products such as esters, chlorides, ethers, xanthates, fruit essences, perfumes, dyestuffs, and synthetic resins. Isopropyl alcohol, because of its complete miscibility with water, is used extensively as a component of anti-freeze solutions for automobile radiators. In the stage of semi-commercial development is butadiene, which is of growing interest in connection with the manufacture of synthetic rubber. Several tons a week are being supplied to rubber manufacturers.

One result of this utilization of petroleum refinery waste products is an important change in the fundamental economics of the oil industry. Mr. Rosenstein pointed out that it would have been difficult to foresee the revolution in gasoline manufacture which was to come about as a result of one of the steps in secondary-butyl-alcohol synthesis—the step which consisted in removal of the isobutylene content of the feed by absorption in cold sulfuric acid, and recovery of the acid by heating, which polymerized the isobutylene to di-isobutylene, the source of iso-octane. So important has this chemical industry become that Mr. Rosenstein said, in some instances the refinery may be utilizing by-products of the chemical factory, and not the factory the by-products of the refinery.

Solvent Simplifies Distillation

The proposed method of increasing the efficiency of fractional distillation, described by F. D. Rossini, B. J. Mair, and A. R. Glasgow, National Bureau of Standards, is an interesting one. It depends upon a principle similar to that used when salt is thrown on ice in winter to cause it to melt (because the melting temperature is lowered). In azeotropic distillation, as the process is known, it is the boiling points of the hydrocarbons that are changed. The process would only be used where 2 hydrocarbons of different type, but

of the same or nearly the same boiling points, are to be separated. Instead of salt, a solvent is added to the mixture of hydrocarbons, and the boiling points of the 2 types of hydrocarbons are changed by different amounts so that they are made far enough apart to enable fractional distillation. After separation, the solvent is removed and used over again.

The method has been used commercially in the chemical industry and in the petroleum research laboratory, but if it has been used in the petroleum refinery no information is yet available regarding such application.

Although the subjects of catalytic cracking and processes for production of iso-octane or other aviation fuel components were not discussed at this year's annual meeting, there are developments in progress which are noteworthy and will be felt in both the motor and aviation fuel fields.

Mougey Paper Starts Debate Over 'Heavy-Duty' Motor Oils

N. P. N. News Bureau

CHICAGO, Nov. 16.—Oil men attending the refinery session of the American Petroleum Institute here Nov. 14 heard one of the leading automotive researchers give his reasons why the new type, so-called "heavy-duty" motor oils are needed to solve lubricating troubles of gasoline and diesel engines operating under severe service conditions.

Among the marketing-minded oil men in attendance, the paper and discussion that followed raised several questions:

At what point in the operation of an engine does "moderate" service end and "severe" service begin?

To what extent does the average passenger car experience "heavy-duty" service and what will be the demand for these special oils among owners of some 27,000,000 passenger vehicles?

Satisfactory lubrication of both gasoline and diesel engines in heavy-duty operation has been admittedly one of the most difficult joint problems facing automotive and lubrication engineers.

Following exhaustive experiments in the laboratories and tests behind closed doors, some new type oils were developed by oil refiners that promise to solve most aspects of this problem.

Oil's Characteristics Cited

Principal characteristics of these new oils center around their ability to resist oxidation, chemical decomposition, sludge formation, and to prevent or reduce the possibility that contaminants formed in the oil will be deposited on engine parts. These properties are achieved by the use of various additives, anti-oxidants and detergent compounds.

The most severe heavy-duty operation — and consequently the most immediate demand for the new type oils—is that of trucks and buses which, in long sustained runs, build up temperatures detrimental to the oils. It is in these fields that the new oils have had their greatest tests.

However, some passenger cars are operated under "heavy-duty" service conditions for a good part of their life. There is also evidence that many passenger cars—at least for part of the time—are subject to the severity of operating conditions that might be classed as "heavy-duty".

Just how soon this development will affect the types of motor oil the oil marketer handles at his service stations in caring for the needs of the average passenger car, is still a matter of conjecture.

Mougey's Paper Starts Debate

H. C. Mougey, Technical Director, Research Laboratories Division, General Motors Corp., in speaking before the A.P.I. group, presented in an understandable fashion, some of the background and reasons for this need of a new type motor oil (Full text of this paper is published on Page 34 of this issue).

To meet the new requirements placed on gasoline and diesel engines by improvements in engines, fuels and roads, the speaker said, lubricating oils should be resistant to oxidation or chemical decomposition in the crankcase; the oil must not be corrosive to engine parts; the products of thermal decomposition in the combustion chamber should not be excessive; and the oil should be of such a nature that the decomposition products that get into the oil will not adhere too strongly to pistons, rings, or other engine parts.

Discussion of this paper was of unusual length for a refining session.

Dr. U. B. Bray, Alox Corp., was first to make comment. He was in full agreement with Mr. Mougey on all points, stating that lubricating oil development has reached the point where the use of synthetic chemical additives are necessary.

He was of the opinion that, in addition to oxidation resistance and detergency, an oil must have other properties which were not emphasized by Mr. Mougey, such as high oiliness in order that it be able to reduce wear.

This property, he said, was not to be confused with friction reduction. Furthermore, the oil must have high pressure resistance and anti-weld properties and reduced carbon forming properties, Dr. Bray said. Fortunately, he added, when oxidation resistance and detergency are taken care of by the proper additives, these other qualities are also improved.

Dr. J. C. Geniesse, Atlantic Refining Co., was concerned about the necessity for a lubricating oil to pass a 500-hour test run which, he said, was equivalent to 30,000 miles without oil change. Inasmuch as marketers are working on a 1000-mile oil change program, he said he thought it might require them "to go into immediate executive session to reconcile these differences".

The 500-hour test run is used by General Motors to test lube oils for diesel engines.

'Advancing Too Fast'

He felt it was advancing the art too rapidly, for bearings and oils, to demand general availability of a "heavy-duty" oil which will pass the severe tests described. He suggested that tests should more closely similate average road performance and pointed out that the tests described in the paper showed certain rejected oils gave satisfactory performance when oil changes were made at reasonable intervals.

J. R. Macgregor, Standard Oil Co. of California, pointed out that improvements in lubricating oils had kept pace with improvement in design of automotive equipment and that no conventional laboratory test could be relied upon to indicate the performance of an oil in service.

He spoke of the advantage of filtration of lubricating oils during service but showed the impracticability of employing the clay type filter, which gives best results, on automotive equipment. He also discounted the value of extreme pressure and oiliness tests which were brought out by Dr. Bray.

Why Not Rate Engines by Oil Used, Asks Moller, Pure Oil Co. Engineer

J. A. Moller, Pure Oil Co., suggested that automotive engineers had not yet gotten their engine operating temperatures under control and that there is still open the possibility of engine designers reducing the severity of operating conditions on motor oils without loss of performance.

He said, in effect, that an engine's ability to perform on standard or lower quality lubricants can be rated with as much fairness as an automotive engineer can rate an oil in an engine having unusually severe operating characteristics.

Objects to 'Heavy-Duty' Name

Discussing Mr. Mougey's application of the name "heavy-duty" to a certain type of lubricating oil, Ludlow Clayden, Sun Oil Co., cautioned against tieing a name to any present type of oil designed for this service. He pointed out the experience in naming gear lubricants in which the term "extreme pressure" was applied, only to be discarded when hypoid lubricants of increasing pressure resistance were developed. Heavy-duty now may mean a weak oil in the future, he warned.

W. S. James, the Studebaker Corp., said the motor car industry has as much to learn from Mr. Mougey's paper as the oil industry. He admitted that temperatures encountered in engine operation are not yet certain and that engine design can still be improved. He also admitted that engine test conditions fit only a single operating condition and that variation in engines may be greater than differences in lubricating oils.

D. C. M. Larson, Sinclair Refining Co., said there is still a trial and error situation in developing lubricating oils to meet increasingly severe operating conditions, which will require time to overcome. He objected strenuously to present costs of chemicals which are used as lubricant additives.

Dr. A. L. Beall, Wright Aeronautical Corp., was pleased to see an airplane engine problem attacked for engines used on the ground. He said even the diesel engine operating conditions are not comparable with those in an aircraft engine. An aircraft engine, he said, has to be completely torn down every 500 to 600 hours for cleaning. He added that there should also be more emphasis placed on the wear problem as far as aircraft lubricating oils are concerned.

THE EDITOR'S PAGE

Readers Comments and Opinions will be much Appreciated by—WARREN C. PLATT, Editor and Publisher, Penton Building, Cleveland, O.

But What Will the Last Report Be and When?

An oil man rendered a report to his brother oil men at the A.P.I. meeting at Chicago last week.

It is the first of what will undoubtedly be the most important and momentous reports ever made to this industry. When the last report will be made to the oil men of this country only the gods know. What will occur in between only those gods also know, just as they alone may know what that last report will say.

For this report was about a "new way of life," as some may call it, but more exactly it is about a new way of killing, of killing by petroleum-driven machines, tanks and planes; a way of killing that could not exist—so far as our technical knowledge now goes—without this petroleum industry; a way of killing that destroys non-combatants and their towns and homes and hospitals and schools . . . and their children; a way of killing that is the farthest in ethics and decency from the ways of past wars when men walked or rode on horses to do battle with each other.

The title of the report itself marked the wide difference between war of the past and this war, for the title was "Synthetic Hay for Our War Horses."

The report was made by an oil man, Dr. Robert E. Wilson.

We like the "Dr." title because it denotes so definitely to the average mind the ways of peace. This "Dr." was trained to serve his fellow man with the helpful thoughts of his mind. From the faculty of a great technical school he taught others in the sciences so that they might make our American living easier and better and happier. Then he joined the technical staff of a big oil company—there to search out ways of making petroleum's service to the people a greater one and at less expense, ways by which the people could enjoy peace in a still higher degree.

Probably considerably more than a thousand like him in this oil industry heard him make his report that day last week.

This man of peace told the oil men of the country at that Chicago meeting, of the progress that is being made at Washington in converting their peaceful achievements to the cause of war, of the success in making petroleum of equal importance to gun powder and metal, and of far more importance than just the men who wear the uniforms and receive the bullets.

We heard Dr. Wilson as he made his first report to the industry as assistant to the National Defense Commission in charge of petroleum. We heard him tell of the increasing amounts of petroleum products that will be needed, of the desirability for creating storage of some products, aviation gasoline particularly and in underground tanks, of the hope that government would let the oil industry develop its service to this war without undue interference.

We heard the Doctor's voice but only saw the general picture that his words painted, as we looked around the big room filled with several thousand oil men, whose energies and whose dollars and whose wells and refineries and distributing systems from now on will be dedicated to killing, or, we hope, to a protection of ourselves from killing.

We heard his voice, but we wondered what will the future reports be like and especially what—and when—will the last report say?

We wondered if oil, like other industries perhaps, will have to fight two wars, one against the killing of men abroad and the other against the killing of industrial and individual freedom in this land?

The doctor hoped that the oil industry would be allowed to provide its war facilities without government assistance . . . and we thought of all the battles that have been fought by oil men against encroaching government machinery, both state and national; and we thought of the bill still waiting in a Congressional committee for an auspicious time for its presentation for a vote, that would place complete oil control in one man who would sit in a fine marble building on what is mistakenly called "Constitution Avenue."

And all the while the doctor, product of America's greatest institution—its educational system—was telling how we would have to take the things that oil men have devised to send people cheaply and comfortably and happily down the ever smoother roads of our land, and yes our life too, and contribute those peaceful things to more killing in Europe and to build up a wall along our own coasts with them to try and head off any killing in this country.

The doctor stopped finally and hurried off to board America's marvel of all time, an airplane, to return to where the planning for more killing is being rushed day and night.

It was not just another "convention report" that the doctor had made, we decided, but perhaps one of the most momentous in the history of this industry and one of the greatest of all time . . . great not for just what it said . . . but great for the era that it opens up, an era that extends to that last report, whatever and whenever it may be.

So we are printing the doctor's report in full in this issue, every word of it. And whether you produce oil wells, run a refinery or haul and sell the products of our crude, we urge that you study this report, but at the same time let your mind wander ahead of it, ahead of what it happens to say and ahead of the day or evening you may read it, ahead to what this whole warring business may mean to you and your business, as well as to what war's dictatorships may mean to your freedom and that of your children.

The Oil Industry is Well Prepared

How well the oil industry is prepared to meet the unprecedented demands of this war for petroleum and its products was told by Col. T. H. Barton, A.P.I. director, president of the Lion Oil Refining Co., of Eldorado, Ark., and, so we first learned, member of the Democratic National Committee. That paper we also print pretty much in full because every oil man should, first, be convinced of the present adequate facilities of the industry and second, be able to discuss that conviction intelligently and forcefully with whomever of the general public he meets.

We wish it were possible to forget about government interference with the oil business, but unfortunately that is one question that the last election left open so that the great probabilities are that the industry will hear much more about government control over oil in the next four years than it has heard in the last eight years, much as that was. Therefore, what Colonel Barton told the oil men is needed by every oil man if he would help oppose what will probably be one point of attack, and that is that "war's needs for such a great quantity of petroleum requires that the government take charge of the industry" or words to that effect.

Boyd's Denial Points to API Benefits

Probably it was a fitting opening to a session that heard about war, for Executive Vice-President Boyd of the A.P.I. to make the first rejoinder to the New Deal's recent suit against the A.P.I. and 22 major oil companies and their subsidiaries and affiliates.

Mr. Boyd told of the extensive operation of the Institute, of all its technical work and what those committees had done for the industry, and said that at no time had these committees or the Institute ever violated any law. The record of the Institute and of its committees has always been a public one as was attested by the many score meetings in progress during this meeting and attended by most of the 3000 oil men present.

His speech is also given in full, and in justice to the Institute and the oil industry, every oil man should read and study that reply to the New Deal's most recent attack.

Death Takes 'Josh' Cosden, Jack Vickers

TULSA, Nov. 18. — In the death Nov. 17 of Joshua S. Cosden at Wilcox, Ariz., the oil industry lost one of the "fightenest" men of its colorful history.

The former president of Cosden Oil Co. of Fort Worth acquired and lost several fortunes, but after each loss, he began the accumulation of another fortune.

In his early business career, Mr. Cosden was associated with a Baltimore chemical company. A loan from executives of that firm gave him a start in the Big Heart field of Oklahoma. He built a small "tea-kettle" refinery there, gathered sufficient crude in barrels and carted it away in a horse-drawn wagon to his refinery for the initial run. That crude was bought on credit.

As his first car of gasoline started rolling, a cyclone ditched the car and it was destroyed by fire. Another purchase of crude on credit and another tank car of gasoline was ready for market, this time to be destroyed by a fire that also damaged his plant. This was beginning for "Josh" in the oil industry—all on borrowed money.

Shamrock, Okla., with its green-painted store fronts and derricks and the custom of its residents to use only green postage stamps, proved to be a green field for Mr. Cosden. It was here that he purchased, for $13,000,000 of borrowed money, the properties of the Hill Oil & Gas Co. that skyrocketed him to fame and fortune. Along with this development came the construction of the Cosden refinery at West Tulsa, then the "biggest independent refinery in the world" and now part of the Mid-Continent Petroleum Corp.'s properties.

Leaving Tulsa and his West Tulsa refinery, the oil man moved to New York City to look after his investments. Losses in the cotton market in 1928 brought him back into the oil game to operate a refinery at Big Springs, Tex., across the street from W. D. Richardson's plant.

Ups and downs followed, and at his death his oil properties are said to have included only a small refinery at Wynnewood, Okla. He had been in ill health for many years. Press reporters liked Mr. Cosden because he was news; oil men universally respected him for his fortitude and tenacity.

* * *

Jack Vickers

Although Jack Vickers, Wichita, president of Vickers Petroleum Co., died last week, this oil company will continue under the same management, same personnel, same policies and the same ownership. This was Mr. Vickers' wish.

Mr. Vickers was born at Lowell, Kans., 49 years ago, spent most of his early childhood on a ranch near Liberal, Kans., and later attended the University of Kansas. Grain brokerage was his first business background. In 1918, when the newly-discovered El Dorado field furnished an oil-hungry nation with much of its petroleum requirements, Mr. Vickers entered the oil business, organizing the Vickers Petroleum Co. Since that time the Vickers company has been under the same management.

They say there wasn't a horse hand in the country that hadn't at one time or another come to "Jack" for a short-time loan. Few folks know the extent of his charities. Charity polo games were his specialty. He knew Will Rogers and Hal Roach of the movies well and at one time brought Roach to Wichita for a polo game, proceeds to go to his favorite charity.

And in accordance with his desires, Vickers Petroleum Co. will continue under the same management, without changes in personnel, policies or ownership, it is said.

Mr. Vickers leaves his wife, 8 children, and his father.

Prediction of 25,000 Barrels Daily Is Made for Canada's Turner Valley

Special to N. P. N.

OTTAWA, Nov. 16. — During the next 12 months, Canada's Turner Valley could have an available production and storage of stock on hand sufficient to meet a demand of 9,125,000 bbls., equivalent to 25,000 bbls. per day.

This prediction was made by George R. Cottrell, Canadian oil controller, after making a personal survey of the oil situation in Alberta, and expressing a wish to see this area produce 25,000 bbls. daily.

Alberta Petroleum and Conservation Board has announced the new quota for November as 762,000 bbls., a daily average of 24,500 bbls., or 100 bbls. a day less than in October.

Major companies, he said, have arranged to supply the necessary capacity to take care of large stocks of refined products as well as crude oil. Many of the smaller marketers had, since conferring with him, also taken steps to provide greater storage capacity, Mr. Cottrell said.

Turner Valley oil production in October amounted to 767,542 bbls., from 122 crude limestone products, as compared with 787,083 bbls. in September. October production was 10,542 bbls. short of the Conservation Board's allowable. The number of new wells have come into production in November.

Enough storage is available to permit the present allowable to remain in effect, Oil Controller Cottrell said.

A.P.I.C. Exhibit at Institute Meeting Attracts Attention

Located in the registration room, just outside the door leading to general sessions, the educational exhibit of American Petroleum Industries Committee was seen by everyone of the 3060 registering at A.P.I. annual meeting in Chicago last week

Dubbs double edge

The first refiner to install Dubbscracking in his territory gets the edge on his competitors in marketing as well as in manufacturing

Dubbscracked gasoline sets quality standards that motorists go for—that ordinary gasoline can't meet—there's the marketing advantage

And the refiner makes his Dubbscracked gasoline from any kind of oil—and at lowest cost—that's the manufacturing advantage

How can his competitors get even?

Why, by installing Dubbscracking too—and U. O. P. catalytic polymerization to make high octane polymer gasoline from the cracked gas

No wonder more and more refiners are installing both processes

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

Lights Prevent Plant Sabotage

By Teletype
N. P. N. News Bureau

TULSA, Nov. 19.—The oil industry, with its vital refineries, terminals and pipeline booster stations, is lagging behind other industries in the use of protective lighting against saboteurs, according to Dudley M. Diggs of Schenectady, N. Y., safety expert and lighting advisor for General Electric Co.

In discussing "protective lighting" before the Tulsa section of the American Institute of Electrical Engineers here Nov. 18, the lighting expert said that the big problem in the U. S. today is the protection of our production. He indicated the oil industry was not considering present conditions as seriously as other industries. In general he discussed fundamental lighting arrangements that would leave no "dark spots" within an industrial plant and grounds in which saboteurs could lurk. He expressed his belief that lighted highways are needed as an adjunct to truck transportation of vital national defense.

Questioned at the close of the meeting if any new developments had been made to aid operation of refineries and other oil properties during a blackout, the light expert said the present task is to prepare for hostilities from within. Possibilities of blackouts in this country are in the future, he added.

He did suggest that sodium lights on the inside of a plant equipped with blue screen windows might serve the desired purpose during a blackout. This arrangement would permit natural light to enter the building and would probably meet blackout requirements during a raid, he said. This development is still in the experimental stages, according to Mr. Diggs.

Underground Tanks Are 'Local Problem'

N. P. N. News Bureau

WASHINGTON, Nov. 18. — War Secretary Stimson has written Congressman Carter, Calif., that underground storage of gasoline and oil appears to be a problem for state and local rather than Federal action.

"This subject has been under continuous study in the (War) Department," Stimson wrote. "I am glad to have your offer of co-operation and if the department's studies crystallize to a point requiring legislation, I will be glad to call on you.

"I think the large problem will be to encourage the municipalities and states to take these measures of precaution without federal initiation being required."

Mr. Stimson's letter answered one written in October by Rep. Carter in which the latter urged a study of the desirability of underground storage tanks and other protection facilities for oil and gasoline at public and private establishments.

A.P.I. Studies Safeguards

NEW YORK, Nov. 19.—American Petroleum Institute's plans for protection of oil industry's facilities from sabotage and military attack is expected to take more definite shape within a week or 10 days.

First step will be a nationwide study of practical methods for safeguarding storage facilities and refineries. Country has been divided into five districts. Chairmen for each district probably will be named this week, with individual members later. Committees will be made up of oil company engineers. An overall, policy committee, headed by W. S. Farish, New Jersey Standard president, has been named.

District chairmen will confer with defense commission authorities, mapping plans for the survey.

FBI Offers Advice on Defense Against Sabotage

To combat espionage activity in American industry, the Federal Bureau of Investigation has prepared a special booklet entitled "Suggestions for Protection of Industrial Facilities." This booklet is available to all who qualify, as FBI Chief Hoover states in letter below. In cooperation with other members of Associated Business Papers, Inc., NATIONAL PETROLEUM NEWS is presenting Mr. Hoover's letter for information of its readers.

JOHN EDGAR HOOVER
DIRECTOR

Federal Bureau of Investigation
United States Department of Justice
Washington, D. C.

October 31, 1940

Associated Business Papers, Inc.
369 Lexington Avenue
New York, New York

Gentlemen:

In the war-torn world of today America must strengthen her internal and external fortifications if she is to survive the menace of totalitarianism. The protection of our industrial facilities to insure the uninterrupted production of goods and material is essential to our national defense. Based upon this premise the FBI in September of 1939, in accordance with the request of the War and Navy Departments, inaugurated a program to survey the protective facilities of manufacturing establishments having large contracts to provide the government with defense materials. The purpose of the surveys is to submit recommendations to bolster the physical protective facilities of the manufacturing plants for the prevention of sabotage and espionage activities.

The first and final responsibility to give speed and strength to our national defense program by protection against espionage and sabotage lies with industry itself. Only through the energy and alertness of its officials and workers will the full measure of preparedness be attained.

In line with this plant survey program and to assist industrial concerns and municipalities in establishing effective protection against possibilities of acts of espionage and sabotage the FBI prepared a comprehensive booklet entitled "Suggestions for Protection of Industrial Facilities." Because of its confidential nature this booklet is limited in distribution to heads of duly constituted law enforcement agencies and executive officials of industrial concerns manufacturing defense materials under government contracts.

In response to the many questions as to how to obtain this publication I wish to state that a copy will be furnished an industrial concern upon the written request of an executive official.

Sincerely yours,

J. Edgar Hoover

John Edgar Hoover
Director

Gas Demand Up 6% in December

N. P. N. News Bureau

WASHINGTON, Nov. 19.—Domestic demand for motor fuel in December is estimated as 46,400,000 bbls., or 6% higher than the actual for December 1939, Bureau of Mines forecast today.

Exports of motor fuel, based upon forecasts by the principal exporters are estimated at 1,800,000 bbls., or 100,000 bbls. higher than the November estimate but 1,300,000 less than the actual exports in December 1939.

Bureau then predicted pressure of foreign oils seeking a market indicates some further shrinkage in exports and substantial increases in the imports of crude and residual fuel oil.

Position of gasoline stocks may be improved by moderate winter additions to storage, by accumulation of defense stocks of aviation gasoline, and by the substantial increase in domestic demand indicated for next year.

Benzol production and direct sales of natural gasoline are estimated at 1,180,000 bbls., making an indicated refinery production of 50,220,000 bbls. This is distributed among the various refinery districts as follows:

(Figures in Thousands of barrels)

East Coast	6,730
Appalachian	1,820
Indiana-Ill.	10,540
Oklahoma	3,080
Kansas	2,760
Inland Texas	3,450
Texas Gulf Coast	11,610
Louisiana Gulf Coast	1,280
Inland La.-Ark.	880
Rocky Mt.	1,320
California	6,750

Estimated daily average crude-oil demand forecast by states for December follows:

(Figures in barrels)

Texas	1,277,000
California	593,900
Oklahoma	422,600
Illinois	363,600
Louisiana	280,300
Kansas	188,400
New Mexico	100,600
Wyoming	74,500
Arkansas	66,100
Pennsylvania	47,900
Michigan	47,100
Montana	19,700
Indiana	15,500
Mississippi	13,900
Kentucky	13,900
New York	12,100
West Virginia	9,000
Ohio	8,000
Colorado	3,900
Nebraska	2,000
TOTAL	3,560,000

Signal Hill Tax Defeated

LOS ANGELES, Nov. 16. — Oil operators in the Signal Hill field have defeated an initiative ordinance submitted to the city electors that would have imposed a new tax of from $100 to $300 per derrick per year.

WITH THE ASSOCIATIONS

Arnold Hits Oil Advertising In A.A.A. Convention Speech

N. P. N. News Bureau

WASHINGTON, Nov. 16.—Desirability of practices now followed in gasoline retailing was questioned by Assistant Attorney General Thurman W. Arnold in an address before the 38th annual convention of the American Automobile Association here the past week.

Pointing out that all well-known brands of soup or coffee can be bought in the corner grocery store, Mr. Arnold observed the filling station is not offering the same service. Building of one filling station on a corner to sell one brand of gasoline results immediately in luxurious stations springing up on the other three corners so that competing brands can be kept before the public, Arnold said.

Millions of dollars are spent in singing the praises of various brands of ethyl gasoline over the radio, he continued, but the filling station operator cannot give his customers any advantage in price, despite all such gasoline being the same.

Says It Is 'Private Tax'

This advertising is at the expense of the income group which is eating at about 7 cents a day, Mr. Arnold declared, saying inasmuch as cars are driven by the lowest income group everywhere, price of gasoline can in effect be a private tax upon that group. He contended, however, that he has no intention of trying to interfere with advertising, because "wasteful advertising defeats itself since the company which engages in such practices will go broke."

Cites Big Oil Suit

During a discussion of the Ethyl gasoline anti-trust case, Mr. Arnold said the 2c differential is still being maintained between Ethyl and regular gasoline, although the difference in cost is only about a half-cent a gallon, "after the Ethyl Corp. has made a very large profit," he said.

Gasoline is a problem of restraints of trade rather than of monopoly — "capitalized restraints of trade such as we have charged oil companies in the recent suit we have just started," Mr. Arnold said.

His only other specific reference to the oil suit was: "You probably read in the newspapers that there was some difficulty in getting my suit against 367 oil companies off the ground. It is now underway."

A.A.A. convention adopted a new model state highway zoning statute, which would restrict construction of new filling stations outside incorporated cities to roadside service areas as distinguished from residential, local business, industrial and rural zones.

New measure differs from the A.A.A. uniform state zoning law of two years ago, in that instead of an arbitrary system classification, discretion would be vested in state highway departments which, for example, would locate zones for filling stations and determine requirements as to structure, distance set back from the road, and the size, number and type of signs.

Resolution calling upon the A.A.A. to press before state legislatures immediate enactment of its newly-adopted model zoning statute, was approved by the convention.

Convention also adopted a resolution urging cities to study their parking problem, which while intended to encourage adequate off-street facilities, did not differentiate between public and the private parking lots, such as might be operated in connection with a filling station.

Convention modified its previous stand to approve toll roads, providing they are publicly-operated and self-liquidating in fact, and passed a resolution stating national defense needs do not require wholesale highway construction beyond that warranted by volume of civilian traffic.

Federal Works Administrator John M. Carmody had told the convention in a speech that the U. S. Public Roads Administration is completing a report which shows the main weaknesses in the nation's 75,000 miles of strategic defense highways are 4,000 miles less than 18 feet in width, 14,000 miles deficient in surface strength, 2,400 bridges below standard for strength, and 500 other bridges failing to meet 18-foot width and 12½-foot clearance minimums.

Thomas P. Henry was re-elected president of the A.A.A.

Texas Presents 'United Front' For Separate Oil, Gas Group

N. P. N. News Bureau

TULSA, Nov. 18.—Texas' oil and gas groups today presented a "united front" for an appointive commission to take over the oil and gas conservation duties now administered by an "overworked" Texas Railroad Commission, according to word received here. Virtually all Texas associations representing producers and royalty owners have gone on record as favoring the new commission as a step toward correction of Texas' oil problems.

The following associations now favor creation of a new oil and gas commission manned by expert, non-political personnel: Central-West Texas Oil and Gas Assn., North Central Texas Oil and Gas Assn., Permian Basin Oil and Gas Assn., Panhandle Producers and Royalty Owners Assn., and East Texas Oil and Gas Assn.

The upshot of the whole thing will be the introduction of a bill providing for a new appointive 3-man commission at the regular January, 1941, session of the Texas legislature, it is said. Membership on the commission, according to present conceptions of the proposed legislation, would be for a 6-year period, tenure of office so staggered that during no one period more than one post will be open for a new appointee.

W. G. Skelly Heads Oil's 25-Year Club

N. P. N. News Bureau

CHICAGO, Nov. 12. — "Gosh, Bill, it's been 10 years since I last saw you," was typical of comments heard when approximately 175 members of the Twenty-Five Year Club of the petroleum industry met for their second annual meeting in the north assembly room of the Stevens Hotel. All the members of this club have 25 years or more service in the oil industry, and the average years of service, for the club's 290 members, is about 35 years, stated Allan Jackson, vice-president and director of Standard Oil Co. of Indiana, and retiring president of the club.

Following officers were elected for the coming year: President and Secretary-Treasurer, William G. Skelly, Tulsa, president, Skelly Oil Co., Tulsa. Board of Governors: Harry D. Collier, San Francisco, president, Standard Oil Co. of California; Marion J. Greenwood, Salt Lake City, vice-president, Utah Oil Refining Co.; B. Clifford Graves, Chicago, vice-president, Union Tank Car Co.; Charles L. Suhr, Oil City, Pa., chairman of the board, Pennzoil Co.; and member at large, Richard A. Wotowitch, New York, vice-president, Weaver Shipping & Oil Corp. Mr. Wotowitch was founder of the club. Allan Jackson, retiring president, was also elected as ex officio member of the Board of Governors.

During the meeting, Nelson V. Joyce, Chicago, vice-president, and E. M. McQuillen, Chicago, western sales manager, both of the Swan and Finch Oil Corp., New York, were introduced as representing the oldest oil company today—87 years in business! A motion picture camera "ground away" during the proceedings—photographing all of the quarter-century men as they entered the dining room. These pictures will be shown at the next meeting, it was said.

A NEW KIND OF FLEET CAR IS HERE!

THE BIG NEW LOWEST-PRICE NASH OFFERS:

- ★ 25 to 30 Miles per Gallon of Gasoline!
- ★ Flashing Pickup of New Flying Scot Engine!
- ★ More Seating Capacity than any lowest-price car!
- ★ A Coil Spring Ride on All Four Wheels!
- ★ New "Unitized" Steel Body—Safer, Quieter!
- ★ Improved Weather Eye Conditioned Air System ...and Convertible Bed!

To prove how great this new car is . . . Nash offers every large fleet operator a car to drive for 30 days without obligation!

IT'S here today. The low-price car fleet owners hoped they'd someday see. —The kind of a car that only Nash could build!

It's big, sturdy, beautiful-looking. But just imagine it delivering 25 to 30 miles to the gallon in the hands of your average good driver!

Just imagine the money it can save on your operating costs every year! And we invite you to check this economy yourself—over your own routes, with your own drivers—for thirty days.

We want you to see how—with Nash's many new engineering developments—it will cut your operating costs on gas, oil, tires and maintenance.

From the wheels up—it's completely new. Instead of the usual bolted body and chassis, it has a new "unitized", welded steel body—used for the first time on cars costing less than $1,200. Safer, stronger—yet lighter, it adds extra mileage to tires and gas.

Instead of the usual fuel-wasting engine, Nash has the new economical "Flying Scot" engine—*Manifold-Sealed* with full pressure lubrication for dependable performance and long life.

Instead of ordinary springing, Nash offers something new in the lowest-price field—coil springs on *all four* wheels.

With its new Two-way Roller Steering, salesmen will find it quicker, easier to handle and park.

And it's made to order for winter! The new, improved Weather Eye Conditioned Air System keeps drivers going even in weather cold as 10° below. The Convertible Bed available in every Nash sedan provides a sleeping car for overnight trips.

Actually, no other car on the road today can offer you the comfort, the convenience, the all-around economy of this new, lowest-price Nash. It's ready for your inspection now. Why not see about starting the Nash 30-day test today?

If you are a large fleet operator, write W. A. Blees, General Sales Manager, Nash Motors Division, Nash-Kelvinator Corporation, Detroit, Michigan, and a car will be sent for trial.

Business Coupe illustrated, delivered at the factory, including all standard equipment and Federal taxes . . . **$731**

Weather Eye, Fourth Speed Forward, Convertible Bed; optional equipment at slight extra cost.

NOW IT'S NEVER TOO COLD!

Nash Weather Eye Conditioned Air System supplies drivers fresh air comfortably warm even at 10° below zero . . . can cut down sick days.

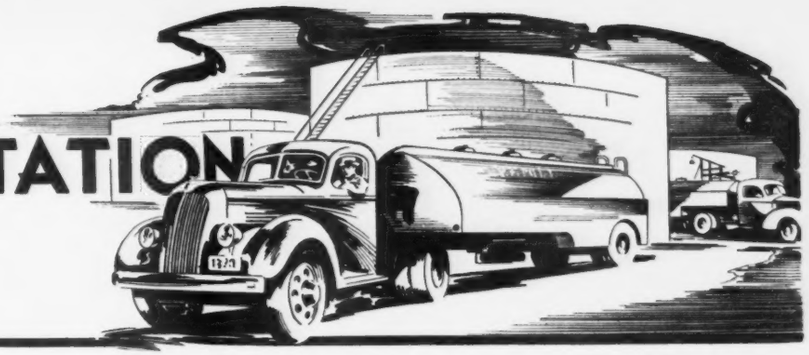
EASIEST HANDLING CAR EVER BUILT!

Nash's new *four-wheel* coil springing, Two-way Roller Steering let salesmen "take it-easy" on the route, yet make more calls per day.

GO NASH

AND SAVE MONEY EVERY MILE!

OIL TRANSPORTATION



Wilcox Again Elected Head Of Petroleum Transporters

N. P. N. News Bureau

LOS ANGELES, Nov. 16.—A nation-wide survey of traffic and rate problems involved in transportation of petroleum products will be undertaken by Petroleum Transporters Division of American Trucking Assns., Inc., according to plans adopted by the transporters at their meeting here in connection with the annual A.T.A. convention.

Transporters during the past year sought to have Interstate Commerce Commission make such a study but the commission declined. Now, they propose to to make such a survey themselves, with a committee of representative transporters from all sections enlisted for the task.

The group also discussed effect of the anti-trust suit filed by Department of Justice against 22 major oil companies inasmuch as most of the transporters' tonnage comes from major companies.

Discussing the ICC's regulations for construction and operation of tank trucks, the transporters were agreed that they were "right well satisfied" with the specifications and rules. Several states have adopted these regulations for local movement and it was decided to seek their adoption in other states.

Transporters also will work with their state trucking associations to have weight limits liberalized where necessary. It was pointed out that with national defense getting prime consideration nowadays, there is greater probability of success for these efforts.

M. L. Wilcox, of Leaman Transportation Co., Downingtown, Pa., was re-elected chairman of the Petroleum Transporters Division. Jack O'Harra, Lang Transportation Co., San Jose, Calif., was again named vice-chairman. Other officers elected were C. W. Kelly, Hutchinson, Kans., treasurer, and C. Austin Sutherlan, Lincoln, Neb., secretary (re-elected).

Ted V. Rodgers, Scranton, Pa.—who is also an oil distributor—was re-elected for his 8th term as president of American Trucking Assns., Inc. All ranking vice-presidents were also re-elected—H. D. Horton, Charlotte, N. C.; Oren H. Scott, Los Angeles; Henry E. English, Dallas; and C. J. Williams, Milwaukee.

Heads Oil Transporters

M. L. Wilcox

New Rail Rates Seen From Oklahoma, Kansas

ST. LOUIS, Nov. 18.—"Truck-competitive" petroleum rail rates from Oklahoma and Kansas refining points to Central Missouri destinations are scheduled to become effective Dec. 10, it is reported here. The new rates are an extension and revision of reduced rates within Oklahoma and Kansas and between Oklahoma, Kansas and parts of Missouri and Arkansas that represent cuts of as much as 33%, it is said.

ICC Values 52 Oil Pipelines At $564,654,534 for Rates

N. P. N. News Bureau

WASHINGTON, Nov. 15.—Interstate Commerce Commission has announced a total rate-making valuation of $564,654,534 for the 52 oil and gasoline pipeline companies which were listed as interstate operators when the valuation of such common carriers was begun in 1935.

Fifty-two companies so valued as of Dec. 31, 1934, include practically all the large important integrated companies, ICC said. Mileage then owned by the companies totaled 92,863 miles, of which 39,724 were gathering, and 53,139 trunk lines. Mileage of the companies now approximates 98,000 miles.

List of interstate carrier pipeline companies has increased to 79 since 1935, and the remaining 27 concerns are in various stages of valuation. Their mileage totals 5063 miles, of which 2237 are trunk and 2826 are gathering lines.

Final rate-making valuation given the 52 companies valued so far are: Ajax, $11,640,000; Arkana, $115,000; Arkansas, $1,015,380; Atlantic, $15,548,800; Atlas, $1,721,800; Bradford, $768,450; Buckeye, $14,477,346; Continental, $4,402,200; Detroit Southern, $446,500; Toledo Northern, $170,000; Empire, $4,715,672; Eureka, $6,412,500; Globe, $19,000; Great Lakes, $16,323,800; Gulf, $34,094,956; Gulf (Okla.), $6,880,800; Gulf (Pa.), $11,304,600; Gulf Refining (La.), $3,110,422; Humble, $54,488,968; Illinois, $24,343,936; Imperial, $1,407,300.

Indiana, $3,004,316; International, $321,800; Magnolia, $42,471,300; Montana, $126,000; National, $5075; New York, $600,300; Northern, $1,918,000; Oklahoma, $13,215,900; Pan-American, $574,821; Phillips, $8,394,032; Pure Oil, $79,098; Pure Transportation, $6,809,542; Shell, $36,120,560; Sinclair - Prairie, $50,090,751; Sinclair - Prairie (Tex.), $16,082,300; Southern, $1,388,805.

South-West Pennsylvania, $2,862,900; Spartan, $737,100; Standard, $17,232,900; Standish, $691,600; Stanolind, $59,837,348; Sun Oil $640,000; Sun Pipe Line, $649,021; Susquehanna, $4,449,201; Texas, $36,521,402; Texas (Okla.), $3,254,550; Texas-Empire, $14,478,222; Texas-Empire (Tex.), $3,165,602; Tidal, $1,993,400; Tide-Water, $4,648,461; Toronto, $601,350; Tuscarora, $3,210,832.

ICC Calendar On Oil Trucking

DECISIONS

A. R. Gundry, Rochester, N. Y., (MC 25662). Issuance of a certificate approved, upon compliance by applicant with certain conditions, to operate as a common carrier on liquid petroleum products, in bulk in tank trucks, between points in Pennsylvania to points in New York, and from Schenectady, N. Y., to Pittsfield, Mass., over irregular routes.

Leo J. Dowd, doing business as Dowd Oil Co., Schuyler, Nebr. (MC 89497). Application denied to operate as a common carrier of liquid petroleum products in bulk from refining and distributing points in Kansas to designated points in northeastern Nebraska, over irregular routes.

Northern Transportation & Supply Co., Inc., Los Angeles (MC 88773). Issuance of a certificate approved, upon compliance by applicant with certain conditions, to extend operations as a common carrier of petroleum products in tank trucks between points in California. Such transportation not to include service to bulk stations served by rail carriers.

R. R. Wallace, doing business as Red Ball Transfer & Storage, Sapulpa, Okla. (MC 4920) Application to operate as a common carrier of oil and petroleum products from Ponca City to points in Arkansas denied.

Clifford C. Smith (M1337). New schedule of rates on petroleum from Kansas to Nebraska which has been filed with the Commission to become effective Nov. 14, suspended until June 14, 1941, unless otherwise ordered by the Commission.

HEARINGS

Clay F. Hinchman, doing business as C. F. Hinchman Transfer, Elkins, W. Va. (MC 3026, sub. 2) Nov. 27, Charleston, on application for certificate to operate as a common carrier of machinery and oil between points located in West Virginia, and points in Ohio, Pennsylvania, Kentucky, Maryland, and the District

of Columbia, over irregular routes.

William A. Young, Northwood Ridge, New Hampshire (MC 2279, sub. 1), Nov. 29, Concord, on application to extend operations as a common carrier of petroleum products in New Hampshire and Massachusetts, between Boston, Mass., and points within 25 miles thereof, and Suncook, Epsom, Pittsfield and Boscawen, N. H., over irregular routes.

Julian Causey, doing business as Conway Transport, Conway, South Carolina, (MC 101733), Dec. 6, Columbia, on application to operate as a contract carrier of bulk petroleum products in North Carolina and South Carolina, between Conway, S. C., and Wilmington, N. C., over specified routes.

Everett Perkins, Newkirk, Okla., (MC 191792), Nov. 27, Oklahoma City, on application to operate as a common carrier of oil field equipment between Kewkirk, Okla., and points located within 20 miles thereof, and points located in the States of Oklahoma and Kansas, over irregular routes.

E. L. Powell & Sons Trucking Co., Inc., Tulsa, Okla. (MC 14743, sub. 4) Nov. 29, Tulsa, on application to extend common carrier operations as transporter of machinery, materials, supplies, and equipment used or useful in the construction, development, operation, and maintenance of facilities for the discovery, development, and production of natural gas and petroleum, between points located in Oklahoma, Kansas, Texas, New Mexico, Missouri, Illinois and Indiana, over irregular routes.

Parkhill Truck Co., Inc., Tulsa, Okla. (MC 30188, sub. 3) Nov. 30, Tulsa, on application to extend operations as a common carrier in transporting machinery, equipment, supplies, and materials used in the discovery, development and production of oil and gas wells, and in the construction, repair and dismantling of pipe lines, in the States of Alabama, Arizona, Arkansas, California, Colorado, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Montana, Nebraska, Nevada, New Mexico, New York, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Tennessee, Texas, Utah, Virginia, Washington, West Virginia, Wisconsin, and Wyoming, over irregular routes.

Gulf Refiners To Fight Cut

HOUSTON, Nov. 18. — Independent refiners on the Gulf Coast today indicated that they would fight inauguration of so-called "water competitive" rail rates on crude oil and fuel oils from the Middle West to eastern seaboard destinations, contending that the proposed rate cut would threaten them with loss of markets.

New rates, if made effective, would probably put the Gulf Coast refiners at a disadvantage in supplying East Coast marketings their heating oil requirements, it was said. Increasing scarcity of tankers and higher tanker rates, coupled with the reduced rail rates would throw the trade balance in favor of the inland midwestern suppliers, some refiners believe. Gulf refiners claim they are placed at another disadvantage by the new rates, because such rates place them in competition with refiners whose raw products are more reasonable than is the case on the Gulf Coast.

Rails to Cut Fuel Oil Rates From Mid-West to East Coast

(*Continued from page* 13)

the purpose of bringing fuel oil or crude from the Mid-West to the East, it would only be necessary to place into effect a point-to-point rate, and not disturb the entire intermediate rate structure. It was charged that the proposal was a "camouflage" to bring about reductions in areas between the points involved.

"The proposal . . . is one of deception to camouflage the real purpose behind it and that is to enable the proponents to ship into Ohio and surrounding states on a more favorable basis than is now available to them," declared E. C. Robinson, traffic manager, Standard Oil Co. at the New York hearing.

"Had the proponents really desired to ship to the Atlantic seaboard exclusively, at the reduced rates, Fourth Section relief would have been sought by the carriers, thereby maintaining the present rate structure to intermediate points," he said.

Ashland Oil & Refining Co., in a wire read before the hearing, also charged that it was a "camouflage" to obtain lower intermediate rates, and stated that Ashland was "unalterably opposed" to their publication.

While it is not definitely known in traffic circles who petitioned for the rate cuts—opponents pointed out that no one appeared in their behalf at the New York hearing, except one road—it was understood that the reductions were asked by a large eastern shipper who has been receiving his supplies from the Gulf.

The movement of fuel oil from the Middle West to the East Coast is not unusual, it is a known fact that considerable oil has moved via rail, at present rates, during the comparative shortage in the extreme cold of late January and February this year.

Mid-Western refineries for more than a year have been edging into eastern marketing territory supplied from the Gulf. New evidence of this is disclosure that one oil company has brought between 100,000 and 150,000 bbls. of light fuel oil and kerosine from Ohio to New York Harbor during past several months via Lake Erie, New York Barge Canal and Hudson river.

Also, several oil companies in western New York state have turned toward the Middle West. One shipper said he has purchased "considerable" light fuel oil and kerosine from Michigan in the past several months. Other west-to-east movements of oil, backing up the normal avenues of supply, to New York also have been reported.

Rate Is 77.7c Per Bbl.

The proposed rate of 24c per cwt. from Chicago to New York would bring midwestern fuel oils into this seaboard point for 77.7c per bbl. Present tanker rates, as a probable indication of what might be expected, have already reached 65c per bbl. for a charter of No. 2 oil from the Gulf to North of Hatteras ports.

What effect lower rail rates might have on shipments inland from the coastal points still remains to be seen. However, areas such as New York harbor where it is necessary to terminal and transship in barges on the inland waterways, could take advantage of the new rates, if and when they are made effective without fourth section relief.

For example, the through rate of 25c per cwt. (77.7c per bbl.) from Chicago to New York would apply on intermediate shipments to Buffalo and Rochester. Present rail rates from Chicago to these cities are 96.3c and $1.05 per bbl., respectively.

FTC Charges Another Oil Reclaimer With 'Misrepresenting' Its Products

N. P. N. News Bureau

WASHINGTON, Nov. 16.—Federal Trade Commission has cited Westville Refinery, Inc., Westville, Ind., with violating the Federal Trade Commission Act in misrepresenting "reclaimed" motor oil.

Westville, which the FTC states is engaged solely in reclaiming and processing crankcase drainings, is charged with representing its products as Pennsylvania oil and of wholly Pennsylvania base. Such representation, the FTC states, appear on container labels. FTC also charges that Westville's use of the brand name, "Para-Penn" is a representation that the oil is from Pennsylvania.

Complaint also challenges the use of the word "refinery" in the company name.

FTC adds that use of the word "refinery" represents that the company operates an oil refinery in the sense as such a term is understood in the industry and by the public.

According to the complaint, the company makes use of words, terms, phrases, and statements which represent, import or imply that its reclaimed and processed motor oil is new and unused oil made from virgin crude and such implication is aided by use in its corporate name of the word "refinery." The implication is further increased, it is said, by the fact that the company's product, when reclaimed and processed, has the appearance of new, unused oil, and by the further fact that it is sold in and from drums and cans of the general size and appearance of those used in the sale of new oil, such containers carrying no marking to indicate that the product is old and used oil which has been reclaimed.

Sinclair Still Posting $1.85

NEW YORK, Nov. 19. — Sinclair Refining Co. is posting $1.85 per bbl. for Bradford-Allegany (Penna. grade) crude, compared with $2.00 per bbl. posted by other leading purchasers following their 15c advances on Nov. 12.

Sinclair contemplates no advance in its price at present, a company official said today. H. F. Sinclair, board chairman, and several other company officials were in Austin, Tex., for statewide proration hearing.

Non-Driver's Status To Be Decided Soon

WASHINGTON, Nov. 15.—Examiner R. W. Snow expects to file recommendations with the Interstate Commerce Commission by Dec. 1, disclosing his views on which employes (in addition to truck drivers) engaged in oil transportation by truck are essential to safety operation and therefore subject to the ICC 60-hour week.

Report will deal with the status of mechanics, loaders, and the like, which if found necessary to safety by the ICC, will be exempted from the maximum hours of the wage-hour division requiring payment of time-and-a-half for all hours in excess of 40 per week.

NEW YORK, Nov. 16.—Socony-Vacuum Oil Co. Inc., effective Nov. 14, reduced its commercial tank wagon price for Mobilgas (regular), 0.1c per gal. in metropolitan New York and Long Island; 0.2c per gal. in Westchester County, the company reported.

A.P.I.'s Relationship With Oil Industry Outlined by Executive Vice-President

By William R. Boyd, Jr.*

(Address at Opening of First General Session, 21st Annual Meeting of American Petroleum Institute, Nov. 13, 1940 at Chicago.)

SUMMARY

In carrying out its chartered purpose, the American Petroleum Institute has not and is not engaged in conducting any collusive or illegal activity. It does not make any suggestions as to how much oil should be produced and stored, how much should be refined or sold and does not make any recommendations as to what prices should be charged.

The Institute has always endeavored to co-operate with all government agencies. While the A.P.I. does not maintain a lobby, the directorate has, on occasions, appeared before legislative committees in support of its position on various matters.

THE American Petroleum Institute is a national trade association.

This is the twenty-first annual meeting of its members—a sort of coming-of-age meeting.

A trade association is an organization of men or companies engaged in the same industry. Activity of a properly conducted trade association centers around the promotion of higher standards, improvement in quality of products, the elimination of waste, and service to the industry's consuming public. A trade association, also, should provide educational and factual information about its industry's conditions that all may know what the existing conditions are.

These things are important to the industrial welfare because industrial welfare is not built upon business failures but upon efficient and successful operation by those engaged in the business. Whatever benefits may flow from properly conducted trade association activities flow not alone to those engaged in the industry, its employes and stockholders, but to all consumers of the industry's products and the general public as well.

A trade association quite properly has definite legal limitations upon its activities. The law and the courts say: "Thus far you may go, but no further!" The courts, in trade association cases, have charted numerous things that can be done within the law. There is much literature on the subject.

Believe me when I say to you, without equivocation or mental reservation, that the American Petroleum Institute has not and is not now engaged in conducting any illegal or collusive activity. Nor do we believe that by any stretch of fact it can be proved by competent testimony in any court of justice that the Institute has ever so engaged. I believe the Institute is observing scrupulously all legal restrictions.

The Institute was born of a patriotic experience. It is the child of a large number of oil men who served patriotically their country as members and committeemen of the National Petroleum War Service Committee, which functioned cooperatively with federal agencies during the first World War. Upon the conclusion of that war, when the members of the Petroleum War Service Committee organization were receiving their honorable discharge, these individuals resolved that it had been generally recognized that the petroleum industry as well as the public would be benefitted by the establishment of a permanent national organization which would collect and disseminate useful facts and statistics about oil and bring about a better understanding of the many complex problems confronting the industry.

At the time, no such national organization existed in the petroleum industry. Until the war service experience, none could have existed.

In 1919, the Institute was incorporated under the District of Columbia law. Its stated purposes were:

(a) To afford a means of cooperation with the government in all matters of national concern.

(b) To foster foreign and domestic trade in American petroleum products.

(c) To promote in general the interests of the petroleum industry in all its branches.

(d) To promote the mutual improvement of its members and the study of the arts and sciences connected with the petroleum industry.

The original members of the Institute were those persons who were identified officially with the National Petroleum War Service Committee and its numerous committees and subcommittees. Always, and now, the members of the Institute have been individuals engaged in the petroleum and allied industries.

Carrying out its chartered purpose, the Institute has endeavored always to cooperate with government administrative agencies in matters in which those agencies manifested an interest or about which they sought facts relating to the oil industry. The record of cooperation in these respects is a long one and I do not know of any instance where any administrative agency of government has ever charged the Institute in this respect with bad faith or impugned its motives.

IN legislative affairs, the Institute maintains no lobby. On occasions its directorate has declared publicly opposition to certain proposed forms of regulation and control and its staff representatives or committeemen have appeared before legislative committees in support of its position. Educational activity has been conducted and appearances have been made widely with respect to unwarranted and unreasonable proposals to tax the industry's products and regulate its operations.

Little or no activity has ever been conducted with respect to foreign relations or the trade of those in the industry engaged in foreign trade.

The Institute has sought over the years and in many ways to promote the interests of the industry in all its branches, and to promote the mutual improvement of its members and the study of the arts and sciences connected with the petroleum industry.

For years the Institute has functioned as the principal technological clearing house of the industry. At its

* Executive vice-president of the American Petroleum Institute.

meetings the industry's scientific minds have publicly and freely expressed themselves and thousands of men have cooperated in committee studies of a large variety of problems common to the industry and its welfare—problems, for example, of engineering, geology, fundamental research, production and refining technique, accounting, accident and fire and waste prevention, and equipment standardization and its proper use and care.

The securing of new knowledge and its dissemination in large quantities has resulted in increased efficiency in every branch of the business. In these respects, the Institute has functioned really as a sort of University of Petroleum which any one in or out of the oil business might attend.

Useful data and statistics about past and current production and stored quantities of crude oil and products have been assembled and disseminated to all who wanted to know these facts. Similar data and statistics long have been gathered by departments of the federal government but their gathering and publication occur at less frequent intervals. The Institute does not make any recommendation or suggestion to any individual producer or refiner how much oil he should produce or how much oil he should refine or store, nor to any marketer about how much oil he should sell or to whom or how or at what price he should sell it. Institute figures relate to an over-all industrial picture.

TIME will permit of only a few other illustrations of how the Institute attempts to promote the industrial interests.

Oil pollution of coastal waters and rivers and streams has been the subject of study by committees.

Standard methods for testing products have been developed by committee work in cooperation with the American Society of Testing Materials.

Corrosion of equipment studies and tests have been made by committees. The problems involved have commanded the attention of many engineers, chemists and metallurgists, and economic loss and hazard to life and property have been reduced.

Much oil country equipment has been standardized and simplified and numerous recommendations have been made for the proper care and use of this equipment. This has been done in cooperation with equipment manufacturers.

Technical and engineering problems relating to how to produce crude oil more efficiently have been widely discussed at Institute meetings and the problems studied by Institute committees composed of petroleum engineers.

Contacts with the Interstate Commerce Commission, the Bureau of Explosives, the Mechanical and Transportation Divisions of the American Railway Association long have been maintained and Institute committees have discussed with them problems involved in tank car construction and operation and maintenance, rules about classification, demurrage, mileage allowance, diversion and reconsignment, the protection of oil sidings from static and stray electrical currents, the gaging of tanks and tests of outlet and safety valves.

Interesting and informative data about petroleum and the petroleum industry and its products, and material about its functioning and its public service have been assembled from whatever sources obtainable and widely published for the information of all those who care to read it.

Institute Pledges Co-Operation On National Defense and Security

During the Mid-Year Meeting of the Institute, at Fort Worth, Texas, on May 29, 1940, the Board of Directors resolved:

"The American Petroleum Industry pledges its full, complete and voluntary cooperation with the government of the United States, and with all agencies of the government in the furtherance of national defense and security.

"The resources, the facilities, the services, and the personnel of the industry can be voluntarily and effectively mobilized in a co-operative program of government and industry for national defense, and the industry pledges, with confident assurance, its ability to furnish a complete, adequate, and continuous supply, at all times, wherever desired, of petroleum and its products to the fullest requirement of the military and naval establishments of the United States, as well as the industrial and civilian requirements of the nation."

The Institute has accepted the invitation of the federally sponsored Transportation Division of the Natural Resources Board, of which Owen D. Young is Chairman, to designate representatives for cooperation in connection with the study of transportation problems.

By request, the Institute has designated a representative to function as an advisor to the Advisory Commission of the National Defense Council on matters relating to transportation by pipe line.

At the request of the Navy Department, the Advisory Commission of the Council of National Defense, has requested the Institute to make a study of the problems of better protection of oil storage against possible hostile attack, including the problem of protecting harbors and thickly populated sections from hazards arising out of bombing attacks on oil storage. Preparations are under way to make the survey and study. Appropriate regional committees, representative of that part of the industry most concerned—committees composed in the main of men of technical training and skill—are being formed as rapidly as we can locate and assign to this service the type of men required. The able Oil Advisor to the Defense Commission is on the program for this meeting and is scheduled to address you this afternoon. I hope he intends to tell you more about this storage problem.'

Numerous oil men are cooperating generously with War, Navy, and other federal agencies in appropriate defense measures in other directions not announced.

So many and varied are the activities of the staff and the many committees of the Institute that it is impossible to enumerate and describe them here in one brief talk.

Let it be said truly that the large number of committees of the Institute's Division of Production do not discuss nor deal with quantities of crude oil produced or stored or the price asked or paid therefor. Likewise, let it be said truly that committees of the Division of Refining do not discuss nor deal with quantities of products refined or stored or the price asked or received therefor.

Since NRA days, the Marketing Division of the Institute has been largely inactive. A few committees have continued to give study to problems that are semi-technical in character. At no time has any committee of the Marketing Division ever had authority to do anything about quantities of petroleum products produced, sold or stored or the price asked or received therefor or with contractual relations between principals and agents, suppliers and jobbers or dealers or between sellers and buyers.

What I have been telling you about Institute activities is generally well known in the industry. Many of you present in this audience today are members of Institute committees and are active participants in Institute work.

I have already said that the Institute was born 21 years ago of a war experience during which oil men stood every patriotic test. During the peace period oil men have stood the test of service to their consuming public and have put together an industrial organization fully prepared to meet all emergencies of war. If, as and when oil men are called again to the colors they are prepared and willing to answer "present".

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Synthetic Hay for Our War Horses

By Robert E. Wilson*

Robert E. Wilson

SUMMARY

Army and Navy demands for petroleum by next spring will offset export losses, and will increase to a point beyond any total requirements the industry has yet seen.

No industry of comparable importance to defense has so few bottlenecks. Most probable bottleneck is meeting demand for 100-octane aviation fuel.

Old equipment should be held in reserve, while more efficient equipment is developed and installed. New facilities for manufacturing 100-octane aviation gasoline not recommended until government is ready to make more substantial purchases. However, additional capacity for this fuel will be needed within 18 months. Government storage of 91-octane aviation fuel not so urgent as the 100-octane grade.

Lubricating oil requirements will be substantial, and efforts are underway to reduce number of lubricants required. Heavy fuel reserves adequate on West coast, but building of additional reserves on East coast recommended. Further development of industry's transportation systems desirable for defense.

* Petroleum Section, Raw Materials Division, Advisory Commission to the Council of National Defense, Washington, D. C.

(Address at First General Session, 21st Annual Meeting of American Petroleum Institute, Nov. 13, 1940, at Chicago)

● To an extent unparalleled in history, the conflagration we are watching is a war fought *with* petroleum and *for* petroleum. Germany's mechanized invasions could never have been undertaken had that nation not previously developed its synthetic processes and built its tremendous plants for making gasoline from lignite. Much of the output of these plants had been hoarded for several years to build up large reserves.

The gasoline consumption of the German army in the few weeks of its drive through the low countries and into France is estimated to have been greater than its consumption during the entire four years of the last World War. Its mechanized equipment was as hungry for gasoline as cavalry ever could have been for hay and, like cavalry, the speed of its advance enabled it to live off the country to a very considerable extent. Both the strategy and the tactics of the war as carried on by the Axis powers have been increasingly dictated by their urgent need to augment their petroleum supplies by every possible means.

Germany's shortage of gasoline and her seizure of all available stocks in the occupied countries have had an effect on civilian life and activity which is almost inconceivable to Americans. Civilian consumption of gasoline practically has ceased. In the streets of occupied France and the low countries, a gasoline-driven vehicle is a rarity, unless it is in the service of the German army (or the Gestapo!). Bicycles, a few horse-drawn vehicles and cars equipped with gas producers, are about the only vehicles that appear on the almost deserted streets. The principal business of some of the automobile companies in France and Belgium is making small trailers carrying equipment to generate gas from charcoal, with which passenger cars are able to operate with fair success.

All this speaks louder than words as to the widespread effects of the shortage of petroleum among the Axis powers. Lubricating oil for industrial machinery is also an acute problem, and animal and vegetable oils have had to be pressed into service, with frequently unsatisfactory results. Oil taken from the crankcases of German planes is reported to have been used far beyond what we would consider safe practice.

On the other side of the picture, Britain's magnificent resistance to what seemed overwhelming odds in the number of planes has been made possible, to no small extent, by Britain's superiority in both the quantity and the quality of her aviation gasoline. Germany appears to have little better than 87-octane gasoline, usually containing excessive quantities of lead, whereas Britain has the benefit of synthetic gasoline of 100 octane number or slightly better. As I shall emphasize later, this apparently small difference fails to indicate the outstanding military value of our new superfuels.

Our Program of Mechanization

Coming now to our own program of mechanization: All are generally familiar with the rapidly expanding program of our navy, culminating in a real two-ocean navy of unmatched fighting power — all dependent upon heavy fuel oil as its driving force. The spectacular development now under way for our air services is also well known, and all new fighting planes are designed to take advantage of synthetic superfuels never dreamed of a few years ago. Military plant production in this country is now close to 1,000 units per month, and this will be more than doubled within a year and trebled in about 18 months. Of course, this by no means represents all the present or future plane-building capacity of our nation.

Less fully appreciated is the tremendous program being undertaken

FLOWING INTO WINTER
Motorists . . . millions of 'em . . . are about to change over to winter-grade oils! And they'll be demanding oils that will flow easily—and keep flowing even at sub-zero temperatures!
Over 90% of all American refiners and compounders of paraffin base oils meet that demand successfully . . . blending small quantities of Paraflow with their products to reduce the pour point as low as 30° F. below zero.
Thus the Industry demonstrates its confidence in Paraflow . . . and over 29,000,000 American motorists second the motion!
PARAFLOW SALES DIVISION
STANDARD OIL DEVELOPMENT CO., 26 BROADWAY, NEW YORK, N. Y.
PARAFLOW

looking toward the mechanization of our land forces. Although our rather late start in this direction has its disadvantages, it has permitted us to take advantage of the most recent technical developments and the latest experience from abroad. Once our tremendous mass-production facilities can be brought into action, we shall be building a quality and quantity of tanks, trucks, and armored cars which will amaze the world. If land defense of this country should ever become necessary, this equipment, using our unequalled system of highways and our widespread and efficient gasoline-distributing system, will give this country a flexible defense system better than several Maginot lines. Just as one great advantage of the cavalry was its ability to live off the country, so the maze of distribution facilities, bulk plants, and filling stations of our peacetime industry will help to supply our mechanical horses with the hay they need, especially insofar as the military equipment is designed to utilize the fuels which are generally available.

To quote from a recent speech by Assistant Secretary of War Patterson —"All animal-drawn transportation is being replaced so far as practicable with motorized equipment. This does not mean that the death knell of the horse has been sounded, or of the army mule either. But of the 27 divisions in the continental United States, 25 now rely entirely on motor transport for tactical operation and supply. The field trains of our cavalry divisions have been motorized. And as a final indignity to the horse, our cavalry reconnaissance regiments are partially motorized and are equipped with motor trailers for the transportation of their horse elements.

"One hundred and eighty-six thousand vehicles will be required to carry out our motorization policy. Of these, 16,000 have been purchased from 1940 funds, and 39,000 will be delivered before January fifteenth. Funds for the remainder are already appropriated or are before Congress."

Wilson Predicts Heaviest Demand Oil Industry Has Ever Seen

What effect will this program have on petroleum? With so many industries running at capacity, adding extra shifts, and building new plants, it may seem surprising that the petroleum industry has not felt the upward surge. However, a little thought should make the answer clear. Our first task must be to make the machine tools and construct the needed buildings. Then we can assemble the organization and start mass-production operations to build the equipment. Only after this long and complicated process is well along in the second stage, does the defense demand for gasoline and lubricating oils really begin to make itself felt.

To date, the total buying of petroleum resulting from the defense program has been negligible—much less than enough to offset the loss of our exports to the continent of Europe. However, this demand is on its way. Not only will the army and navy have steadily increasing demands for almost every petroleum product, but there will also be additional industrial demands and demands from men who will have employment for the first time in many years. I estimate that by this coming spring these increasing demands will, on the whole, offset our loss of exports, and thereafter will increase steadily to a figure substantially beyond any total requirements the industry has yet seen.

Functions of the Advisory Commission

The principal function of the Defense Advisory Commission is, as you know, to discover and, so far as possible, eliminate any bottlenecks in raw materials, production facilities, labor supply, or distribution facilities which would in any way hamper the full development of the program of the army and navy. The Petroleum Section—which comprises Dr. C. C. Monrad, of Carnegie Institute of Technology, and myself—is classified as part of the Raw Materials Department under the very able leadership of Edward R. Stettinius, Jr. In this department each industry of importance to defense has two or three representatives familiar with the technical and business aspects of their industry, who are charged with the duty of ascertaining the total needs of the various branches of the armed services and comparing those with the industry's ability to supply or manufacture those requirements. If this study indicates any probable bottlenecks, it is the duty of the staffs to develop the best methods of meeting these requirements with a minimum of delay, and yet without needless expense to the government or unwarranted disruption of the industry. In some cases this involves only the building of stock piles, or the revision of specifications or methods of purchasing, but in others it may necessitate encouraging the building of new facilities.

In passing I should like to say that the intent and policy of our section is to urge that all contracts for petroleum products be let on the basis of competitive bidding, with adequate notice to all possible suppliers.

The commission staff also functions as technical advisers to the army and navy and other government agencies in matters within their respective fields, and many suggestions from the general public are referred to it for consideration. The commission staff also endeavors to keep its respective industries generally advised as to military requirements as they are developed.

Some of the industries have had difficulty in planning to meet military demands due to the fact that the estimated requirements sometimes change considerably from month to month. In justice to those concerned with the preparation of such estimates, it should be pointed out that the matter of estimating our wartime requirements is by no means a simple proposition. We have heard much of German efficiency in planning invasion programs down to the last detail. Such planning is, however, one of the advantages of an aggressor, and planning for defense against an uncertain enemy in an unknown location at an unexpected time is a far different and more difficult matter. Some of the schedules which were tentatively approved had to be discarded because bottlenecks in other industries necessitated delays or readjustments of the program—and this, in turn, affected the program for still other industries. As our objectives become clearer and our program proceeds, still further adjustments will doubtless be found necessary. I am sure you will understand these and other reasons why it is necessary to present most of the situations confronting us in qualitative terms rather than in precise figures.

In analyzing the probable effects of the prospective growing demands upon our industry from civilian, industrial, and military sources, it seems convenient to divide the discussion in accordance with the customary main divisions of the industry. At the outset I may say, however, that in my opinion no industry of comparable importance to defense has so few even potential bottlenecks as has the petroleum industry. The ability of every branch of our industry to answer "ready!" means much, both to national defense and to our national economy as a whole.

Production

Thanks to proration, the producing branch of the petroleum industry is particularly well prepared for any emergency. During the last war the price of crude had to be increased very substantially in order to encourage more wildcatting and the drilling of many new wells. Although such a prospect might, at first blush, appear alluring to the producer in view of the present state of the market, if there is one thing we have learned, both from the last war and from the hectic twenties, it is that marching up that hill involves a painful slide back down the other side. Some of you may remember the vivid description of the slide by Dave Moffitt at the 1921 meeting of the American Petroleum Insti-

tute in the Congress Hotel. To my mind, one of the most constructive features of the defense commission program is its definite policy of endeavoring to prevent the vicious spiral of "higher prices for everything" from getting started.

Today those states which have practiced sound conservation principles have built up tremendous underground reserves, available at a moment's notice for practically any emergency—and this without putting an extra load on the steel industry or the labor market to drill thousands of new wells. You may well guess that anyone locating new refineries or industries based on petroleum would naturally favor such states over those which have squandered their assets and have only a declining production to look forward to.

Of course, the industry must not relax its normal activity toward making new discoveries, although it should avoid unnecessary drilling and unsound spacing programs which use up capital, labor, and steel to no useful purpose. New wells and fields must be discovered and connected up, and new pipe lines built, as old fields play out. In spite of alarmist reports in various quarters, our industry is still a long way from becoming a static one, coasting along to ultimate depletion.

Urges More Refining Capacity For Civilian Use in Wartime

In refining the possibilities of immediate expansion of output to meet sharp increases of demand is not as great as in production; but, nevertheless, our civilian demand is so large that it still dwarfs every possible military demand except that for a few special products. Few, even in the industry, realize that the increase in our gasoline production is more than twelvefold since 1915. Our shutdown refinery capacity today is greater and more efficient than our entire capacity in 1917. It would be possible, by rather moderate methods of reducing civilian consumption, to meet all military demands without any increase in refinery capacity, so that there seems to be no justification for asking the government to finance new refining capacity, as many seem to anticipate. However, I am sure the petroleum industry would not consider that it had done its duty by its country and its customers if this had to happen. When in cities like Chicago and St. Louis from 40 to 55 per cent of the individuals entering the central zone of the city do so by means of gasoline, we cannot lightly talk of curtailing civilian consumption, as though it could be done as easily as in Europe. If we are to avoid such a possibility, we must at least keep our refineries growing fast enough to keep pace with the growth of peacetime consumption and keep customary reserve of around 20 per cent of shutdown capacity available for possible wartime expansion. As new and more efficient refining equipment is developed and installed, the old should, so far as possible, be held in reserve for emergencies.

100-Octane Aviation Gasoline

Coming to the specific refinery products, the most probable bottleneck in our meeting the army and navy demands is also one of the most romantic stories of our industry, viz., synthetic 100-octane gasoline. Although the advantage of high-octane gasoline in making possible higher-compression engines has long been understood, the appreciation of its tremendous value for aviation purposes is somewhat more recent. In aviation, the more efficient high-compression engines have three advantages—first, a smaller fuel load; second, a lighter engine per horsepower; and, third, less head resistance, due both to a smaller engine and a lower cooling load, because more heat is converted into work and less into heat to be rejected to the atmosphere. All of these mean higher speed and/or greater load-carrying ability, both of which are almost priceless for military purposes. For example, a difference of only 25 miles per hour in the top speed of 2 fighting planes gives the control of the attack or retreat to the faster plane.

While ordinary motor gasoline was making its steady climb from 50- to 55- during the last war to around 75-octane at present, farsighted representatives of the military services and of our industry have been focusing their attention on the apparently unattainable goal of 100-octane for military aviation. Such fuel, which 10 years ago was available only in laboratory quantities at a price of $10 per gallon, can now be made by any one of several newly developed synthetic methods, and is available in large quantities at around 17 cents per gallon f.o.b. refinery. The raw materials for these synthetic processes are certain constituents of natural and refinery gas, available in suitable quantities in almost any large refinery. The final product usually contains some fairly high-octane straight-run gasoline and other constituents including not more than 3 ml of tetraethyl lead.

Fortunately for the defense program, the petroleum industry, with its genius for overbuilding, has already installed synthetic capacity beyond the present domestic and foreign demands, so there is today substantial excess capacity available for the building up of a reserve for possible war demand. The installed capacity is, however, barely enough to meet our probable peacetime requirements, including exports, once our advanced training program is well under way, and is substantially less than enough to meet present estimates of full wartime demand after our plane-building program is complete. Revised specifications have just been issued which should increase the quantity available without any adverse effect on performance. The importance of building a stock pile now, while we do have some surplus capacity, seems obvious, and a substantial start in this direction has recently been made by the army and navy. Even with such a stock pile, it would seem desirable from the defense viewpoint to have some additional capacity available within about 18 months, and I am hopeful that the industry will undertake such construction without government aid if we are able to arrange to give such plants the benefit of the 5-year tax-amortization provisions. I hesitate to urge the industry to accumulate further stocks before the government really begins more substantial purchases, but the prospective demand is such that I would not be doing my duty by either the government or by the industry if I did not urge that all existing plants be operated and no more synthetic product be diverted to motor fuel. Additional synthetic capacity could also make it possible to further improve the octane rating of the gasoline used by the military service, or it could be used to increase the quantity of 91-octane available for training purposes.

91-Octane Aviation Gasoline

Gasoline of 91 octane number (formerly 92-octane) is to be the main reliance for more than half of the training activities of the services, and will also be rather widely used by the airlines and as a constituent (along with synthetic blending stock) of 100-octane gasoline. This product may also be a bottleneck by the time the training program gets well under way about a year from now. Inasmuch as this product, which may now contain up to 4 ml of tetraethyl lead, is largely a product of selected crudes with the possibility of adding substantial amounts of catalytically cracked or hydroformed gasoline, the possible shortage problem can be solved in various ways—including, if necessary, the granting of increased allowables for crudes which have a high content of aviation gasoline. Here, again, it appears desirable for the government to build up substantial stocks of this material in order to take advantage of present low prices and to minimize later dislocations of the industry; but the matter is not as urgent as in the case of 100-octane gasoline. Again, however, I hope the industry will conserve all available supplies of 91-octane aviation gasoline.

Lubricating-Oil Requirements

The lubricating-oil requirements of the aviation and the army mechanization programs will also be very sub-

stantial; however, insofar as we have been able to develop them, they will not be much greater than the export demand which has been lost. Apparently there will be no bottleneck problem, although we have called the attention of the army and navy to the fact that such products are today available at unprecedentedly low prices. Efforts are under way to reduce the number of different specifications for lubricants to simplify the problem of supplying the needs of the army in particular.

Heavy Fuel Oil for the Navy

Heavy fuel oil for the navy is a problem to which considerable study has been given. For a naval war in the Pacific, industry stocks and underground reserves are both more than adequate, but for a possible major effort in the Atlantic, industry supplies from domestic sources would not be adequate to meet both naval and industrial demands, even if allowables were increased on the few relatively heavy crudes available east of the Rockies. For this reason we have recommended that the navy build up substantial additional reserves of fuel oil on the east coast and at the proposed new bases. Fortunately, if an emergency should develop before such stocks are built up, east-coast demands could be met by shipments from California or the importation of heavy crudes and fuel oils.

Helping Eliminate Bottlenecks In Other Industries

As indicated, our industry is surprisingly free of bottlenecks, and even those which now appear can readily be taken care of in one or more ways. However, our ability to supply large quantities and a wide variety of cheap hydrocarbons means that we will be more and more called upon to help eliminate bottlenecks in other industries which need hydrocarbons for raw materials. Two examples which are of major importance are toluene for TNT, and synthetic rubber. The supply of toluene from coke ovens is not sufficient to meet military demands, but these demands can readily be met from petroleum raw materials, without the runaway toluene prices which prevailed during the last war—in fact, overlooking capital cost, the petroleum industry can make more than enough toluene to meet all needs at costs lower than present toluene prices. Synthetic rubber also can be made more cheaply from petroleum than from other raw materials, and at costs not far above the present price of the natural product. Although the development of various types of synthetic rubber is proceeding apace under private initiative, if we expect to have a really substantial backlog of synthetic production within the next 18 months, some substantial government assistance appears to be necessary. The production of other chemical products starting from petroleum raw materials is also being rapidly expanded.

Although such matters of assistance to other industries are not the primary responsibility of the Petroleum Section, it has, of course, been glad to co-operate in every way possible.

Transportation

In the Defense Advisory Commission, transportation is the primary responsibility of Commissioner Ralph Budd, with Mr. Fayette B. Dow as his adviser on pipe lines. I should like, however, to comment on our industry's special transportation situation from the viewpoint of the Petroleum Section.

So far as the transportation of crude is concerned, there is adequate capacity in existing lines to take care of any reasonable expansion, but it will, of course, be necessary to continue to build new lines into new fields and supplement lines into fields where the production is increased.

Gasoline transportation by tank car and pipe line in the interior of the country is also capable of handling a substantially increased load without difficulty. The most serious possible bottleneck is in tanker transportation facilities, which are not adequate to take care of any sharp increase in demand except by the curtailment of civilian supplies. Fortunately, a considerable number of tankers is under construction, but they will not much more than take care of normal growth in demand plus the tankers which have been and are likely to be requisitioned for service with the navy. Some American-built tankers operating under foreign charter might, of course, be put back into American registry if serious need arose; and, in the event of a real emergency, arrangements could probably be made to put a number of foreign tankers into our own service. However, in the event of any serious naval activity in the western Atlantic, tanker transportation seems very likely to be disrupted or greatly slowed down by the necessity for using convoys. If we are prepared to meet such a possible emergency, it is necessary to augment existing transportation methods for getting petroleum products to the east coast.

It is, of course, not feasible to transport heavy fuel oil by pipe line, and the building of additional crude lines to eastern refineries could probably not be justified as an investment for private capital, although it would evidently have value for defense purposes. However, further development of gasoline-pipe-line and inland - waterway transportation would be desirable, at least to the extent that it could be financed by private capital.

Storage Problems

In order to be prepared to meet emergency demands at uncertain locations and to protect its customers from possible interruptions of transportation, it appears that the industry in general should increase its storage facilities, particularly along the eastern seaboard, and should count on carrying somewhat larger stocks in storage than would otherwise be considered adequate.

The adequate protection of such storage facilities from possible bombing attack is a matter that has given concern to both the federal and state agencies. At our request, the American Petroleum Institute has appointed a number of regional committees to study this question and to confer with the army and navy representatives in the various areas, both from the standpoint of protecting the industry supplies and of protecting congested areas or harbors from the results of possible attacks.

A committee of seven expert terminal engineers, loaned by oil companies in different parts of the country, has been co-operating with the Petroleum Section and the army and navy in developing economical designs and desirable types of locations for the storage, by the two services, of reserve stocks of products such as aviation gasoline and fuel oil. It is anticipated most of such storage will be placed underground, particularly at the more exposed locations. Underground storage of much of the industry's stocks would not seem to be either feasible or necessary; but where new tankage is to be built in congested areas with high land values, the saving in area required, plus the greater safety and lower upkeep, should be carefully considered as offsets to the higher costs of buried storage.

Need for Unity

In closing these informal remarks, I want to emphasize just one thing, and that is the need of our country for unity. We are facing many problems, and our potential enemies are all too hopeful that under a democracy our divisions and disagreements will be such that they will be able to divide and conquer. To an outsider it might appear that our whole nation had been split into two hostile camps. I am certain, however, that these divisions will quickly disappear, as they always have in the face of a national emergency—like the divided waters of the Red Sea, they will join together in ample time to destroy the army of our enemies. We must also have better understanding and co-operation between capital and labor, government and industry, and also between the large and small units of industry. In my opinion, the best way to preserve our country's independence and our own system of free enterprise is to show that we can work together effectively to meet the demands of the army, the navy, and civilians—avoiding waste and keeping prices reasonable, all without having to call for help from an already heavily burdened government.

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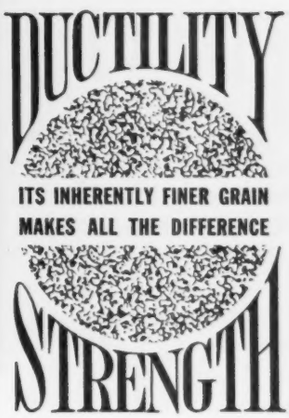

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Heavy-Duty Motor Oils

By H. C. Mougey*

Address before Division of Refining, 21st Annual Meeting of American Petroleum Institute, Nov. 14, 1940 at Chicago.

SUMMARY

With improvements in engines, fuels and roads, the service requirements on gasoline and diesel engines are increasing rapidly. This means that the lubricating oils should be able to lubricate the engines under the heavy-duty service conditions that are becoming more common.

Oils and fuels are just as much parts of the engine as pistons and crank shafts. Progress in engines and progress in oils and fuels must go hand in hand. Neither the oil nor automotive industry can make much progress by itself.

H. C. Mougey

THE name "heavy-duty," as applied to lubricants, is tentative. The American Petroleum Institute has a committee which is studying this subject; and when this committee makes its suggestion as to the name by which these lubricants should be known, I feel sure that the name this committee proposes will be adopted by the automotive industry. In the meantime the tentative name "heavy-duty" is being used.

The story of heavy-duty lubricants is the story of progress. The oil and automotive industries constitute a kind of Siamese twins, and the well being of each industry very closely is bound up with that of the other. The cost of an automobile, and the cost of petroleum products to operate the automobile during its expected life, are approximately the same, and progress in one industry depends to a very large degree on progress in the other industry.

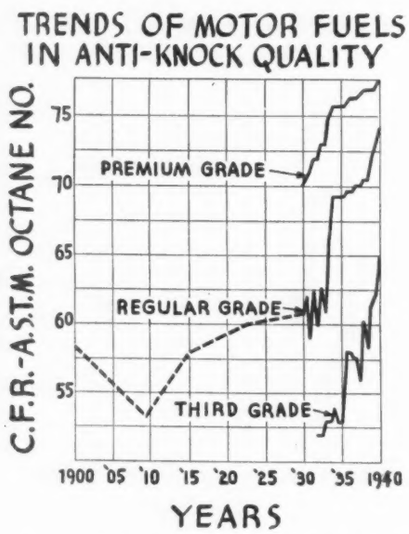


Fig. 1. Trend in Anti-Knock Quality of Motor Fuels. Data from "Trends in the Properties of Volatile Liquid Fuels," by D. P. Barnard and A. H. Fox, Standard Oil Company (Indiana), symposium on "New Materials in Transportation," Detroit Spring meeting, American Society for Testing Materials, March 6, 1940, and from "Better Fuels for Better Engines," by William H. Hubner, Ethyl Gasoline Corporation, SAE J.47(4) Oct. (1940)

Octane-Number Trend

During the last few years progress in refining gasoline has been very rapid. The trends in octane rating of gasoline are shown in Fig. 1. In the very early days "octane" rating of fuels was unknown. As the demands for gasoline increased, more and more higher-boiling low-octane fractions were included in the gasoline, until about 1910—when the trend became reversed due to the fact that the increased use of cracking provided larger amounts of fractions with somewhat higher octane rating. With the more general use of lead in regular gasoline, about 1933, the octane value rose rapidly. It then remained fairly stationary for several years, until competition caused a number of companies to increase the octane rating of their gasolines—and this higher level is now the rule rather than the exception. Unless this trend is changed by the war, or by legislation, or by some other factor, it appears that the industry will try to consolidate its position at this general level for two or three years, at which time the shape of the curve indicates that a further increase in octane value may take place.

While this progress was being made, the automotive industry has followed the petroleum industry in developing automobiles that will use these gasolines to the best advantage. In this work improvements in automobile engines have followed, and not preceded, the development in fuels, as obviously it is impossible for the automotive industry to market automobiles in large numbers unless the fuel to operate these automobiles is available.

Automobile-Manufacturing Trend

Trend in average automobile costs and relation to horsepower in recent

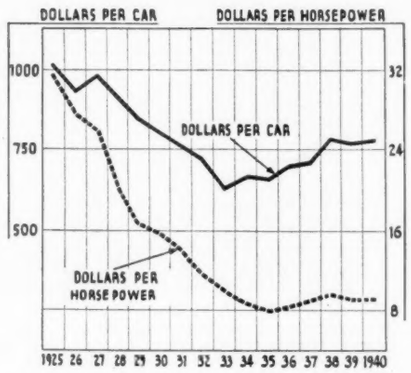


Fig. 2. Trend in costs of automobiles (Data from Automobile Facts and Figures, 1940)

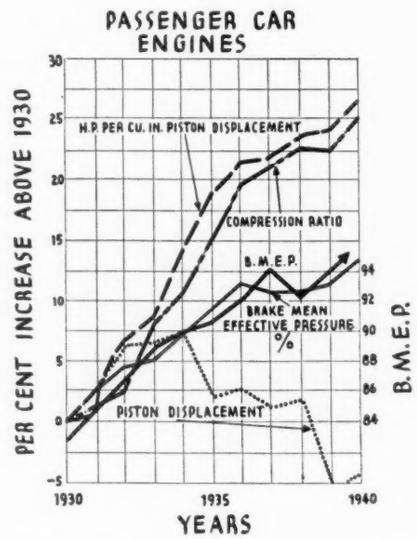
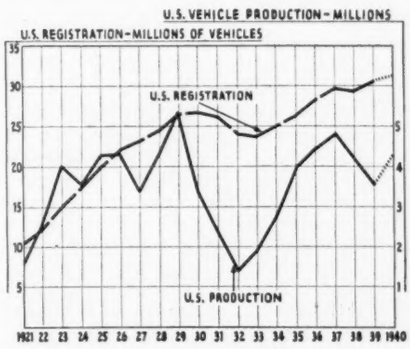


Fig. 3. Trends in passenger-car engines (Data from same source as Fig. 1)

*General Motors Corp., Detroit, Mich.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U.S. REGISTRATION-MILLIONS OF VEHICLES
U.S. REGISTRATION
U.S. PRODUCTION
1921 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 1940

Fig. 4. Automobile registration and production (Data from Automobile Facts and Figures, 1940)

years for the entire automotive industry, is shown in Figs. 2 and 3. In Fig. 4 it will be noted that up to 1929 the problem of production was very great, but during the last 11 years we have not quite reached 1929 production; and when we study the curves in Figs. 2, 3 and 4, it is apparent that production problems are not as great as they were formerly, and the real problem in recent years has been to produce better cars for less money.

Diesel Trend

In the diesel industry progress is taking place at a very rapid rate. According to an advertisement that appeared in *Diesel Progress* in April, 1938, a 3000-hp diesel engine of 1926 weighed 801,000 lbs., or 267 lbs. per horsepower. In 1938, twelve years later, for an engine of the same power the weight was only one-tenth as much, or 25 lbs. per horsepower. At the time this advertisement appeared, streamline diesel passenger trains already had been in service for several years. The first streamline passenger train started in service in 1934. The engine developed 660 hp. and weighed 20 lbs. per horsepower. This train is still in service. It now is operating between St. Louis, Mo., and Burlington, Iowa. This train long ago passed the million-mile mark, and streamline passenger trains now are so common that it is difficult to write a news item about them.

In the railroad diesel industry the introduction of diesel engines for main-line freight trains is the most important recent development. The first freight diesel for main-line service started operation this year. The diesel engines in this locomotive develop 5400 hp., and weigh 124,000 lbs. This is 23 lbs. per horsepower, based on the engines, without taking into account the weight of other parts of the locomotive. Of course, the extra power required for the auxiliaries is in addition to the 5400 hp. which is delivered to the generators.

At the same time the diesel advertisement previously mentioned appeared in the magazine, the factory for manufacturing the General Motors model 71 diesel started in production. These engines are small enough to be used in trucks and coaches. The 6-cylinder engine develops 165 hp., and weighs 1650 lbs., or 10 lbs. per horsepower, without the use of light-weight alloys except in the blower. A fleet of 21 coaches powered with these engines operates over one of four sections of the route between Chicago and the Pacific Coast. The mileage covered by the fleet since delivery in June, 1939, is so large as to average for each coach nearly half a mile per minute (26.5 miles per hour), counting no time out whatever, day or night. The present operating schedule is about 20,000 miles per month for each coach. Coaches using this engine are now in use in both city and inter-city service. It is interesting to note that on July 15 of this year the actual miles operated by 594 of these coaches in 27 fleets totaled more than 40,000,000 miles, an average of 67,000 miles for each coach.

Progress in diesel development is continuing at a rapid rate. Similar records could be given of diesel progress in connection with tractors, marine service, national defense, etc. It is apparent that diesels, made without low-weight alloys, and similar in weight per horsepower to gasoline engines, are now in successful commercial use. However, recent work indicates that, if it should be desirable for special purposes—such as national defense—to decrease these weights, it should be possible, by the use of special construction, to develop diesels of large power output with weights as low as 3 lbs. per horsepower.

Road Progress

In discussing progress in the oil and automotive industries, progress in roads must be considered. This progress is just as spectacular; but because roads extend over such great distances, it is harder to visualize the progress that is being made. However, every year enough outstanding developments occur so that we continually are being thrilled by these achievements. The most recent of these is the completion of the Pennsylvania Turnpike, which provides for safe high-speed travel between Pittsburgh and Harrisburg.

Lubricating-Oil Evolution

When we contemplate the progress that has been made in fuels, in automobiles, and in roads, the questions naturally arise: "What has been done to make lubricating oil more suitable for heavy-duty service in modern engines"?; and "what changes, if any, are desirable"?

In the minds of the general public, the quality of any product usually is associated with its cost. In the case of lubricating oil, this is not necessarily true. The only real measure of quality of a lubricating oil is its performance in service, and this depends as much upon the suitability of the oil as upon its composition or cost. A high-quality oil for any service is one that gives good results in the particular service in question.

Some of the things the oil industry already has done in improving lubricants are:

1. Oils with low pour points (to improve pumping of the oil at low temperatures).

2. Oils to improve starting in cold weather (10-W and 20-W).

3. Oils with less change in viscosity with change in temperature (high viscosity index).

4. Oils with improved anti-friction properties (oiliness, extreme-pressure oils, hypoid lubricants, etc.).

5. Oils with less-easily oxidized sludge-forming materials (improved refining, including solvent refining).

6. Oils for "heavy duty" (not all oil companies now make such oils).

Additional Heavy-Duty Properties

We recently made a series of tests to determine what additional properties oils should have for heavy duty. A General Motors model 71 diesel was operated for test purposes at full load and full speed without a filter, using a Mid Continent conventionally-refined SAE 30 oil. The tests showed that the oil increased, with use, in acid and in chloroform solubles; and that the rate of increase was much higher with 235- to 240°-F. crankcase oil than with 185- to 200°-F. oil; but the increase in "carbon," or "chloroform-insoluble material," was not affected by crankcase-oil temperature—at least until after the oil in the crankcase had become oxidized very badly. This indicated that the increase in acid and chloroform solubles was the result of oxidation in the crankcase, and the "carbon" in the crankcase oil in these tests was the result of thermal decomposition of oil in the combustion chamber—with part of these decomposition products escaping through the exhaust, and part working down past the pistons and getting into the crankcase oil.

If the engine was operated for a long time under heavy-duty conditions on this straight mineral oil without using a filter, the oil in the crankcase oxidized, and the oil that got up into the combustion chamber thermally was decomposed, and the resulting decomposition products in the oil caused trouble.

1. Increase of acid caused bearing corrosion.

2. Increase in oil-insoluble products plugged oil passages and interfered with the supply of oil to surfaces which should have been lubricated.

3. Increase in oil-insoluble products plugged air ports, interfering with combustion, or they stuck on the pistons or piston skirts, causing ring sticking or scuffing of the pistons.

When we operated the engine on the straight mineral oil with small filters which mechanically removed some of the oil-insoluble materials, the troubles

due to these insoluble materials were decreased—depending upon the efficiency of the filters and the frequency with which the filter elements were changed.

An Ideal Oil

When we operated the engine on the straight mineral oil with very thorough filtering, using large fuller's-earth filters, none of the foregoing troubles occurred, and the engine could be operated for many hundreds of hours without change of oil and with no appreciable effect on either the oil, pistons, rings, or bearings. This amount of filtering, however, was much more than we could expect in normal use of the engine.

These tests indicated clearly that an ideal oil should not oxidize in the crankcase, so that no acid or sludge or other oxidation products would be formed in the crankcase; and it should not form deposits by thermal decomposition in the combustion chamber, which would work past the piston and plug the ring grooves, adhere to the piston or other engine surfaces, or contaminate the crankcase oil and interfere with oil distribution to the surfaces requiring lubrication. If this ideal oil is not possible, then very complete removal of the decomposition products with a suitable filter would solve the problem. If this cannot be done commercially, then another solution might be a special oil. Such an oil would be made from a suitable type of crude and so refined that:

1. It would not form undesirable deposits by thermal decomposition in the combustion chamber.

2. It would not contain objectionable amounts of easily-oxidized sludge-forming materials.

3. It would not corrode bearings nor oxidize in the crankcase, forming corrosive acids or objectionable amounts of insoluble oxidation products.

4. It would have the property of preventing any soot or carbon or other decomposition products from sticking to the surfaces of the engine parts. This property is called "detergency."

Oxidation Resistance and Detergency

If such an oil could be obtained, and if it were used with a judicious combination of filtering and draining to prevent an undue accumulation of decomposition products, it should give very satisfactory results in heavy-duty service with either gasoline engines or diesels, or both. However, inasmuch as gasoline engines in general operate at higher speeds than diesels, with resulting higher crankcase-oil temperatures, and as diesels in general are likely to form more products of incomplete combustion in the combustion chamber, it is apparent that the best oil for heavy-duty service in gasoline engines will stress resistance to oxidation in the crankcase, and for service in diesel engines the emphasis will be on detergency. As gasoline engines and diesel engines differ among themselves in regard to crankcase-oil temperature under heavy-duty service conditions, and in regard to the amounts of decomposition products which form in the combustion chamber and tend to work down past the pistons, it is apparent that different models of diesels or gasoline engines will vary in the way they stress oxidation resistance and detergency.

For example, a diesel which had corrosion-resistant bearings, and which operated with low crankcase-oil temperature but with high ring-belt temperature, would stress detergency and freedom from the formation of carbon by thermal decomposition in the combustion chamber, with not much importance attached to resistance to oxidation. It probably would be easier to make an oil especially suited for such a diesel by using low to medium viscosity-index (VI) stocks. On the other hand, a diesel with just the reverse in these characteristics would stress resistance to oxidation, with much less importance attached to detergency, and it would probably be easier to make an oil especially suited for such a diesel by using medium or high VI stocks. There might be this same kind of difference between gasoline engines. However, by properly combining detergency, resistance to oxidation, and freedom from thermal decomposition, it would be possible to make a single oil that would be highly satisfactory in all kinds of diesels or gasoline engines, or both.

In this reference to the use of different VI-base oils, it should be emphasized that these properties are not due to the VI of the oil, nor to its gravity, or color, or other similar properties, but to such properties as its solvent power, its thermal-decomposition products, and to the difficulty of removing easily-oxidizable sludge-forming materials by refining.

Crankcase-Oil Temperatures

In this discussion the subject of high temperatures has been mentioned. According to the fundamental laws that apply to the development of mechanical power from thermal energy, the efficiency of any engine depends upon the difference between the highest temperature at which the working fluid is used and the lower temperature at which this working fluid is exhausted. This means that the trend of temperature level in engines will continue to be high; and as automotive engineers learn of ways in which temperatures of any particular parts of the engine can be lowered, the tendency will be to take advantage of such a possibility by increasing the power and efficiency of the engine, rather than by actually lowering the temperature. Progress in this direction should not be handicapped by any failure of the oil industry to make available lubricants that will operate at as high temperature levels as possible.

In considering crankcase-oil temperatures it must be remembered that engines do not always operate under heavy-duty service conditions. Door-to-door milk delivery is an example of very light service in which crankcase-oil temperatures are likely to be low, and in the winter trouble due to condensation of water in the crankcase may be experienced. Almost any passenger automobile may be subject to operation for longer or shorter periods of time in other similarly light service. In trying to overcome trouble due to condensation of water in the crankcase, the methods that have given the best results are:

1. Frequent draining, to remove the condensed water along with the crankcase oil.
2. Preventing the condensation of water in the crankcase by keeping the cooling liquid warm (thermostats).
3. Removing the condensed water from the crankcase oil (ventilation, with high enough crankcase-oil temperature to make the ventilation effective).

This means that automobile engineers must see to it that the crankcase oil warms up very rapidly to a minimum temperature, and this factor also tends toward a set of conditions wherein high crankcase-oil temperature under heavy-duty service may result, even though engineers recognize that anything they can do to decrease maximum crankcase-oil temperatures greatly will decrease the troubles likely to be experienced in heavy-duty operation.

Testing Heavy-Duty Oils

After the problem of making heavy-duty oils is understood thoroughly and methods of solving the problem are known, the next problem is the testing of such oils; for without test methods it is impossible to develop the oils or to tell how nearly satisfactory the oils are after they have been developed. Unfortunately, there are no standardized chemical laboratory tests by which we can predict the performance of oils under heavy-duty service—although certain tests, such as the Underwood test, are very valuable in this work. The final measure of quality always must remain "performance in service." However, it is possible to make engine tests under controlled conditions; and, from the results of these engine tests, very good predictions as to performance in the various kinds of service can be made.

It may be objected that engine tests consume too much time and money, but this same principle of service testing under controlled conditions is the standard method of testing in many lines of endeavor. For example, the official method of mushroom testing is:

"To test a mushroom, simply eat
The specimen you chance to meet,
And note, next day, with studious care,
If you've stayed here or gone elsewhere."

In testing oils in our laboratory we have standardized on two tests, one using a Chevrolet engine and one using a model 71 General Motors diesel en-

WHEN THE HEAD LET GO ON THE HOT OIL PUMP!

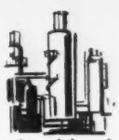
This is from a Fire Report, on file in our New York office—an actual incident.

"On September 9th the —— Oil Company, in their gas oil pump room, had a head let go on the hot oil pump operating at 750° temperature.

"The break sprayed hot oil all over the room; the oil, upon contact with the air, immediately burst into flame and a severe fire resulted.

"Electric alarms immediately sounded, giving warning of the blaze. Through remote controls they released a battery of eighteen 50-pound LUX cylinders. The LUX System promptly controlled the fire, closing the doors, shutting down ventilating fans, and smothering the blaze with LUX carbon dioxide gas.

"The management was delighted with LUX operation because the pump room is directly under a four million dollar still and because the fire had been really dangerous. Intense heat had completely destroyed the thermostat in the ceiling, had burned insulation off all electric wiring in the conduit.



"This was the Company's first fire experience with a LUX Built-In System. They had often used LUX portables on small fires. They were tickled, too, because 4½ hours after the fire the LUX System was back in order again, all cylinders filled—even before the pump was repaired."

* * *

What happened in that hot oil pump room has a meaning to anyone who handles flammable liquids. LUX extinguishers kill these blazes with split-second speed with one of the fastest of all known extinguishing agents—carbon dioxide snow-and-gas.

The rule—if it's an intense fire hazard, get a LUX Built-In System, automatic or manual control; if it's a smaller hazard, LUX portables will handle it.

If you're interested in fast, safe, fire-fighting, send the coupon.

A COUPON WORTH MAILING

Walter Kidde & Company, Inc.

1129 West Street, Bloomfield, N. J.

Send me, immediately, your free folder, "Don't Play With Fire." I understand it describes both portable and built-in fire extinguishing equipment.

NAME.....

COMPANY.....

ADDRESS.....

TABLE 1
Laboratory Tests

	Chevrolet Engine Test	Model 71 General Motors Diesel-Engine Test		
		3-Cylinder	4-cylinder	6-cylinder
Revolutions per minute	3,150	2,000	2,000	2,000
Equivalent miles per hour	60	....	....	....
Load, brake horsepower	30	80	106	160
Water (out), deg. F.	200	180	180	180
Crankcase oil, deg. F.	280	230	230	230
Oil consumption (approximate value)	500 miles per quart	0.20 lb. per hour	0.27 lb. per hour	0.40 lb. per hour
Miles per quart (calculated for 60 mph.)	500	570	422	285
Length of test, hours	67	500	500	500
Length of test (calculated miles for 60 mph.)	4,000	30,000	30,000	30,000
Bearings	Babbitt (with 1 copper-lead)	Copper-lead	Copper-lead	Copper-lead
Filters	None	*	*	*
Oil change during test	None	None	None	None

*Filters are not used for the first 144 hours (8,640 miles) in order to learn as much as possible about the rate of increase of oil-decomposition products. The regular filter equipment is used during the remainder of the test (356 hours, 21,360 miles).

gine. The Chevrolet engine test, in the manner in which we conduct it, stresses resistance to oxidation of the crankcase oil. The model 71 General Motors diesel test stresses both detergency and resistance to oxidation. On request, we shall be glad to send full details in regard to these tests to anyone who is interested; but, briefly, the test conditions are as shown in Table 1. Of course, these conditions are chosen for test purposes, to develop the weaknesses of the oils being tested; and these test conditions are not recommended for regular operation in service.

Oxidation Inhibitors

The oil industry is quite familiar with the problems connected with the development of oils which have the special properties required for heavy-duty oils, but until recently it has not tried to combine all these properties in a single oil. Several years ago when copper-lead and cadmium bearings first came into use in large production, the oil industry was faced with the problem of making oils resistant to the development of acid. If the oils were refined to such an extent that the easily-oxidized sludge-forming materials were removed, the natural oxidation inhibitors which prevent oxidation of the oil with formation of acid usually were removed also, at least to a great extent. To correct this deficiency, oxidation inhibitors were added—and thus this problem was solved.

Other Desirable Properties

Several years later, when the problem of special diesel oils became acute, it was found that, by the addition to suitable base oils of materials called detergents, the difficulties due to decomposition of oil in the combustion chamber and at the ring belt could be overcome. However, this development was made on a test schedule with babbitt bearings and with a crankcase-oil temperature of approximately 130 deg. F. and with an oil-drain period of 60 hours. With such a schedule, oxidation resistance and stability of the base oil were not very important and, consequently, many of the oils originally developed on this schedule were unsuited for use in engines with alloy bearings, or with higher crankcase-oil temperatures, or for use when longer oil-drain periods were desired. However, the oil industry recently has learned how to make oils which have all of these desirable properties, and such heavy-duty oils are now in rather wide distribution.

Bearing Corrosion

In any discussion of heavy-duty oils, the subject of bearing corrosion always comes up. In any service, bearings should not fail from any cause. This includes failing due to poor anti-friction properties, poor resistance to fatigue, or poor resistance to corrosion. When babbitt will produce bearings of suitable resistance to fatigue, it is probable that it will continue to be used, due to its good anti-friction and resistance to corrosion. When babbitt is not good enough in resistance to fatigue, the logical answer at present is to use cadmium or copper lead, and to avoid corrosion trouble by using oils which will not form acids nor cause corrosion under service conditions.

There recently have been introduced new bearings which may solve this corrosion problem without sacrifice of the desirable properties of anti-friction and resistance to corrosion. The new main bearings in use in the 1941 Buick are a type of bearing that gives them the anti-friction and corrosion-resistant properties of babbitt with a very high resistance to fatigue. Babbitt is a corrosion-resistant material composed of a rather soft and weak matrix, which has its fatigue resistance increased by the inclusion of certain hard and strong crystals. Copper lead is largely the reverse. It is a hard and strong matrix, which has its anti-friction properties increased by the inclusion of lead, but the lead is subject to corrosion. The new Buick main bearings are fundamentally similar in structure to copper-lead bearings. They have a hard and strong matrix firmly bonded to the steel backing, with the anti-friction properties of the bearing increased by the inclusion of corrosion-resistant high-lead babbitt (see Fig. 5 to 8, inclusive).

If service tests now under way indicate that corrosion-resistant bearings with other suitable properties, such as anti-friction, resistance to fatigue, etc., can be produced commercially, it is evident that such bearings will solve the

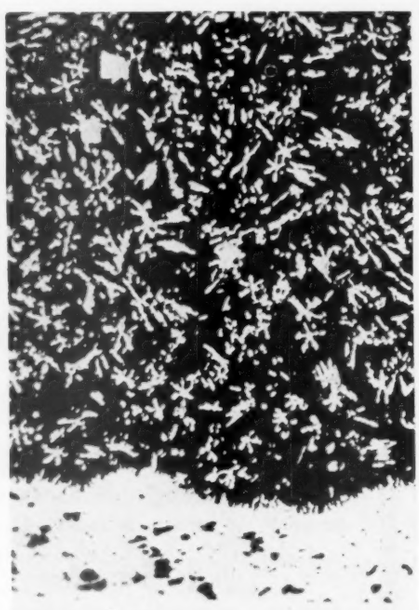


Fig. 5. Cross section from high tin babbitt bearing. Magnification 100X. Tin—84.08%; Copper—7.88%; Antimony—7.29%; Lead—0.75%. The dark areas are high tin. The white crystals are various hard compounds of tin, copper, and antimony

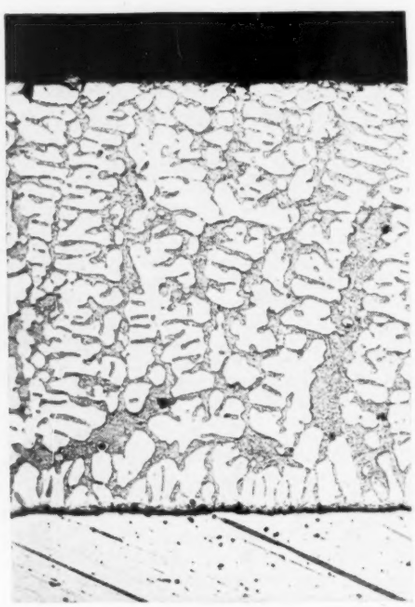


Fig. 6. Cross section from conventional copper-lead bearing. Magnification 100X. Copper—60%; Lead—40%. The light colored area at the base of the picture is a part of the steel back. The white crystals are practically pure copper. The dark areas are practically pure lead. The edge at the black portion of the picture is the bearing surface

Fig. 7. Buick type composite bearing. Magnification 100X. The light colored area at the base of the picture is a part of the steel back. The white areas are copper-nickel hard matrix, bonded by fusion to the steel back. The dark areas are corrosion resistant lead base babbitt. This babbitt is put into the bearing after the copper-nickel matrix is fused to the steel back, and the babbitt thickness can be varied at will giving a thin over-lay of babbittt, bonded both mechanically and by fusion to the copper-nickel matrix. In the Buick main bearings this over-lay is only a very few thousandths of an inch thick

Fig. 8. Experimental "synthetic copper-lead" bearings. Magnification 100X. The structure of this bearing is similar to that described in Fig. 7. The bearing surface is obtained by removing the over-lay of babbittt, giving a bearing surface of hard copper-nickel for strength and resistance to fatigue, and a soft surface of high corrosion-resistant babbitt for anti-friction properties. The bearing surface has a 40% area of copper-nickel and a 60% area of babbitt

corrosion problem. However, it must be emphasized that millions of engines with copper-lead or cadmium bearings are now on the roads, and these engines will continue to require lubrication for a number of years. This means that, regardless of any progress which the automotive industry makes in development of corrosion-resistant bearings, the oil industry should not think that this relieves it of the necessity of producing oils which will not oxidize nor corrode bearings.

Oxidation in poorly refined oils produces oil-insoluble sludge, and oxidation in highly refined oils produces oil-soluble oxidation products which may be precipitated in the form of sludge when fresh oil is added, either to maintain the oil level or when the crankcase oil is drained and the fresh oil is added to the oil which remains in the engine. It was believed formerly that "coffee grounds" were produced by chunks of carbon dropping from the under side of hot pistons, but it is known now that most of the coffee grounds in crankcase oil are the result of adding fresh oil which precipitates insoluble deposits from the oil-soluble material in oxidized oil in the crankcase. Further heating of these insoluble deposits, even at normal crankcase-oil temperature, soon changes them to the familiar hard and insoluble coffee grounds. The only commercial solution to this problem is to prevent the oxidation of the crankcase oil in service in the engine.

Piston Problems

It cannot be emphasized too strongly that the real problem in producing heavy-duty lubricants is in connection with the pistons, and not with the bearings. If this were not so, there would be no problem of heavy-duty lubricants for engines with babbitt bearings. Even though, as a result of intensive work by the automotive industry on corrosion-resistant bearings, such bearings finally should be in universal use, as long as engines of the present types are made we shall have pistons; and, in order to provide these pistons with proper lubrication, the oil industry should be able to supply oils that will not oxidize in the crankcase, with the formation of sludge, coffee grounds, and varnish—and the oil should be of such a nature that the products of thermal decomposition, which originate in the combustion chamber, will not adhere to rings, pistons, or other engine parts.

Summary of Tests

As illustrations of the kind of results that can be obtained at the present time in both gasoline and diesel engines under different operating conditions and with different types of oils and addition agents, some of the data from engine tests may be of interest. Except as noted, the tests were made on the test schedules shown in Table 1. In the tests on oil for gasoline engines, Chevrolet engines were used. In the tests on oils for diesels, model 71 General Motors diesel engines were used. These tests may be summarized as shown in Tables 2 to 6, inclusive.

Effect of Decomposition Products Originating in the Combustion Chamber in a Gasoline Engine

A series of four runs was made to throw light on the problem of decomposition products originating in the combustion chamber. The oil used was a highly refined 20-W Pennsylvania-base oil. The pertinent data in

TABLE 2

Summary of Tests

Run No.	Crankcase-Oil Temperature (Deg. F.)	Jacket-Water Temperature (Deg. F.)	Speed (RPM)	Temperature of Underside Piston Crown (Deg. F.)	Remarks
1A	280	200	3,150	500-510	Regular run, load to maintain piston temperature constant (about 25 hp.)
2A	280	200	3,150	300-315	Engine motored, gasoline line disconnected, throttle closed. High combustion-chamber temperature due to heat of compression.
3A	280	200	3,150	275-280	Same as run 2A, except exhaust valves cut off to avoid compression of air in combustion chamber.
4A	280	200	3,150	275-280	Same as run 3A, except 0.50 per cent inhibitor X and 0.50 per cent inhibitor Z added to crankcase oil.

TABLE 3

Operating Conditions

Run No.	Decomposition Products from Combustion Chamber	Oil Analysis	Engine Condition (Disregarding Possible Effect of the Oil on Alloy Bearings)
1A	Normal, normal testing operating condition	Bad	Good
2A	Large amount of decomposition products resulting from partial decomposition of oil in combustion chamber	Very bad	Very bad
3A	Very low combustion-chamber temperature, almost all of decomposition products in oil originating at crankcase oil	Bad	Good
4A	Very low combustion-chamber temperature, with formation of decomposition products in crankcase oil prevented by oxidation inhibitor	Very good	Very good

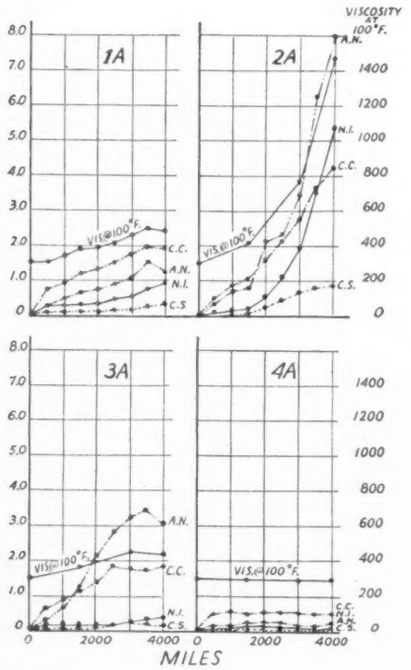


Fig. 9. Used-oil analyses, oils 1A to 4A, search General Chemistry Department.) A. N., acid number; C. C., Conradson carbon; N. I., naphtha-insoluble; C. S., chloroform-soluble

regard to the operating conditions are shown in Table 2, and the test data are shown in Table 3 and in Fig. 9.

Run 1A is a normal run. It is apparent that, when most of the oil that gets past the pistons is burned and discharged through the exhaust—largely as CO_2, Co, and H_2O — most of the changes in the crankcase oil take place in the crankcase. However, as shown by run 2A, it is possible to have operating conditions under which an appreciable portion of the oil that gets on the cylinder walls is only partly oxidized, and some of it can get back into the crankcase—further contaminating the crankcase oil. Run 3A illustrates operating conditions wherein practically all the change in the oil occurs as a result of oxidation in the crankcase, and run 4A shows how this oxidation of oil in the crankcase may be prevented by the use of an inhibitor.

Tests No. 5 and 5A show the very great improvement that resulted from adding a suitable oxidation inhibitor to oil "A." Photographs of the pistons from these two runs are shown in Fig. 10. Tests No. 6 and 6A show the advantage of having a base stock from which the easily-oxidizable sludge-forming materials have been removed. However, as previously noted, if such a highly refined oil should not contain sufficient oxidation inhibitor, it is subject to oxidation at elevated temperature with formation of corrosive acids, and with the formation of oil-soluble oxidation products which may be precipitated by the addition of fresh oil—forming sludge, varnish, and eventually coffee grounds.

Tests No. 7 to 7C, inclusive, show that, although a detergent may help very greatly in preventing the oxidation and decomposition products from sticking to the engine parts, the problem is only partly solved by the use of a detergent, unless the oil is also resistant to oxidation. These tests also illustrate the difficulty in predicting the condition of the engine from used-oil analysis above. Other conclusions to be drawn from this series of tests are that, if a choice must be made between two oils—one with good inhibitor but poor detergent values, and one with poor inhibitor and good detergent values—it is apparent that for the operating conditions of this test the oil with the better oxidation resistance would be preferable. However, the more desirable combination is an oil good in both oxidation resistance and in detergency.

Tests No. 8 and 8A show the importance of crankcase-oil temperatures, and illustrate the point that, even though an oil of "medium quality" may be very satisfactory for medium service, for "heavy duty" oils of superior properties are required.

Oils for Diesel Engines

Typical results of tests made on model 71 General Motors diesel engines, in accord with the Detroit Diesel Division test procedure, are shown in Tables 5 and 6.

The oil-analysis data from the samples of used oil, taken during the test runs, are shown in Table 6. In accord with the test procedure, the first 144 hours are run without a sludge filter. The filter is installed at 144 hours and used during the remainder of the test,

TABLE 5

Oils for Diesel Engines

Oil	Hours of Test	Oil Analysis	Engine Condition: Bearings	Engine Condition: Pistons and Rings
Oil D (medium VI oil, low in both oxidation resistance and in detergency)	100	Bad	Good	Bad
Oil E (low VI, low in oxidation resistance but good in detergency)	116	Bad	Good	Bad
Oil F (medium VI, high in oxidation resistance, and high in detergency)	500	Good	Good	Good
Oil G (high VI, high in oxidation resistance but intermediate in detergency)	500	Good	Good	Fair
Oil H (high VI, high in oxidation resistance and high in detergency)	500	Good	Good	Good

TABLE 4

Oils for Gasoline Engines

Test No.	Purpose of Test	Oil	Miles of Test	Oil Analysis at End of Test: Acid No.	Naphtha-insoluble %	Chloroform-soluble %	Engine Condition at End of Test: Sludge	Varnish on Pistons	Effect of Oil on Alloy Bearings
5	To show effect of oxidation inhibitor.	Oil A, solvent-refined high VI 10-W.	3,500	3.44	2.28	0.73	Slight	Very bad	Corrosive
5A	.....	Oil A plus 3 per cent sulfur-saponifiable oxidation inhibitor.	4,000	0.39	0.63	0.05	None	None	Non-corrosive
6	To show effect of base oil	Highly-refined high VI 20-W.	4,000	1.26	0.92	0.29	Slight	None	Corrosive
6A	.....	Conventional - refined Mid Continent 20-W.	2,000	0.66	1.07	0.87	Very bad	Very bad	Non-corrosive
7	To show effects of detergent and oxidation inhibitor.	Oil B, highly-refined high VI 10-W	2,000	7.70	0.99	0.45	None	Pistons stuck transparent varnish	Very corrosive
7A	.....	Oil B plus metal compound detergent.	3,000	9.70	3.41	1.75	None	None	Very corrosive
7B	.....	Oil B plus 3 per cent sulfur-saponifiable oxidation inhibitor.	4,000	0.46	0.48	0.11	None	None	Non-corrosive
7C	.....	Oil B plus 3 per cent sulfur-saponifiable oxidation inhibitor plus metal compound detergent.	4,000	0.22	0.38	0.08	None	None	Non-corrosive
8	To show effect of crank-case-oil temperature.	Oil C "medium-quality" medium VI oil, with crankcase-oil temperature held at 280 deg. F.	4,000	2.62	2.01	1.85	Very bad	Very bad	Corrosive
8A	.....	Oil C, but with crankcase-oil temperature held at 200 deg. F.	4,000	0.27	1.16	0.33	Good	Good	Non-corrosive

GULF PRODUCTS MAKE CARS FLY

Lucky Teter and his Hell Drivers Float Through the Air for the Glory of No-Nox and Gulfpride

FOR FOLKS who like excitement . . . who want to *see* how good a gasoline is—Gulf offers Lucky Teter.

This nerveless gentleman appears at carnivals and state fairs, jumps a car 100 feet through the air, and tells the world it was Gulf No-Nox gas that gave the big push. Which is good advertising.

Chances are the same spectators will be exposed to some more Good Gulf advertising before the day is out. They'll pick up a newspaper or magazine and read a Gulf ad. Or turn on the radio and hear a Gulf program. Maybe they'll read a news story about one of Gulf's innumerable race victories and records on land, sea, or air. Perhaps they'll consult a Gulf road map . . . or their kids will come in from play with a Gulf Funny Weekly given them by "that nice Gulf dealer down at the corner."

That's all part of Gulf's policy of advertising to reach lots of people lots of ways. In the past few years, it's done plenty to boom Gulf's reputation. And has helped to make a Gulf franchise pay dealers and distributors better profits every year.

GULF

GULF OIL CORPORATION

PITTSBURGH, PA.

Skyrocketing 100 feet through the air from one ramp to the other, Lucky Teter goes over this big truck about 15 feet off the ground.

Despite the mechanical beating taken by his $200,000 fleet of cars, trucks, and motorcycles, Teter hasn't a single case of lubrication failure to report in two years of using Gulfpride Oil.

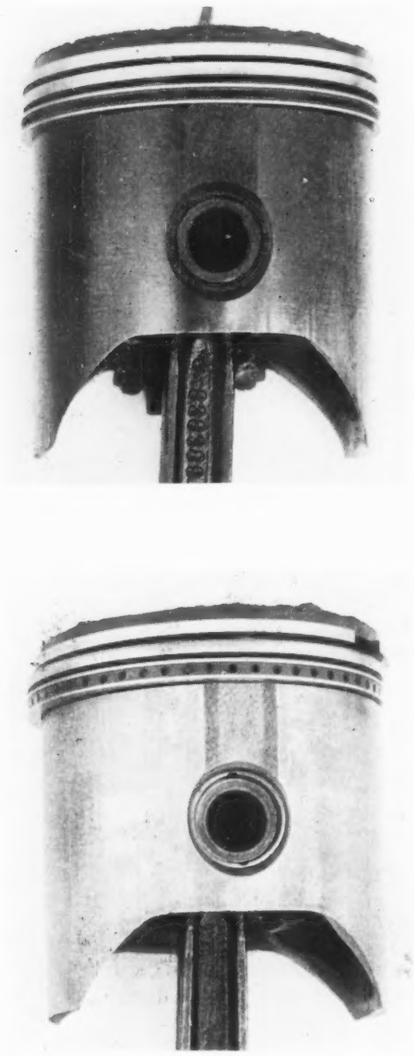


Fig. 10.—Pistons from runs on oils 5 and 5-A. The dark colored piston is from the run on oil 5. The dark color is the varnish formed on the piston in this run. The light colored piston is from the run on oil 5-A. Note the absence of deposits

changing filters when necessary. With oils "F" and "H" only one filter was used; with oil "G," seven filters were used.

In the case of oil "G," this was more than was actually necessary, because in the test with this oil the filter would remain in good condition about 125 hours; but the extra filters were used to learn more about the effect of filters, and to try to find out if more frequent changing of the filters would remove the desirable addition agents in this oil.

If an oil is low in detergent properties, the decomposition products from the oil tend to stick to all engine parts, including the filter surfaces. If the oil is high in detergent properties, these decomposition products are less likely to stick to the engine parts or to be caught in a filter. This means that, in actual service, filters will plug up much more rapidly if the oil is low in detergent properties. It also means that, in order to maintain the filtering of the oil in a satisfactory manner, the filter elements must be changed much more frequently if the oil is low in detergent value. Of course, it is possible to produce an oil so high in detergent value that a filter will have no effect on the oil. The dirt is so highly dispersed that the filter will not hold it.

The subject of heavy-duty oils is very large, and there are many other points that could be developed if time permitted. Among these is the commercial problem of crankcase-oil drain periods. It is evident that, if the operating conditions are too severe, or if the crankcase-oil drain periods are too long, or if the oil is not sufficiently resistant to oxidation to be used for long periods of time without draining, then much better results would be obtained with shorter oil-drain periods.

It should be pointed out that oils differ very greatly in their ability to furnish satisfactory lubrication under severe operating conditions, and that engine operating conditions also vary over a wide range. For moderate duty, oils of a wide variety of properties appear to be satisfactory; but for higher duty, which means operation at higher temperatures, oils which are resistant to the effects of higher temperatures are very desirable, even though oils of quite poor quality may be operated under severe operating conditions if they are drained frequently enough. Certainly no one should go crazy in regard to either extreme of long or short oil-drain periods; and, regardless of any of our personal views, this is a commercial problem that will be settled for all of us by the people who pay the bills for oils and fuels and engines and maintenance.

SUMMARY

1. With improvements in engines, fuels, and roads, the service requirements on gasoline and diesel engines are increasing rapidly. This means that the lubricating oils should be able to lubricate the engines under the heavy-duty service conditions that are becoming more common.

2. In order to meet these requirements, the lubricating oils should be resistant to oxidation or chemical decomposition in the crankcase; the oil must not be corrosive to engine parts; the products of thermal decomposition in the combustion chamber should not be excessive; and the oil should be of such a nature that the decomposition products that get into the oil will not adhere too strongly to pistons, rings, or other engine parts.

3. Oils and fuels are just as much parts of the engine as pistons and crankshafts. Progress in engines and progress in oils and fuels must go hand in hand, and neither the oil nor automotive industry can make much progress by itself, or if progress lags behind in the other industry.

4. These desirable results can be obtained by the oil and automotive industries at the present time.

TABLE 6

Oils for Diesel Engines

	Neutralization No.					Chloroform-soluble					"Carbon" (Naphtha-insoluble Minus Chloroform-soluble)				
Hours	Oil D	Oil E	Oil F	Oil G	Oil H*	Oil D	Oil E	Oil F	Oil G	Oil H*	Oil D	Oil E	Oil F	Oil G	Oil H*
20	0.1	0.4	...	...	...	0.04	0.05	...	...	...	0.24	0.19	...	0.18	0.06
40	0.1	0.8	...	0.1	0.3	0.12	0.1	...	0.08	0.01	0.40	0.24	...	0.28	0.06
60	0.2	0.9	...	..	..	0.24	0.3	...	...	...	0.56	0.22	0.03	0.42	0.10
80	0.4	1.4	...	0.1	0.3	0.80	0.7	...	0.06	0.02	0.88	0.42	...	0.42	0.16
100	0.4	2.2	...	0.1	0.4	1.6	1.5	...	0.08	0.02	1.6	0.64	0.05	0.36	0.24
116	..	2.1	...	..	..	...	2.2	...	...	...	...	0.80	...	...	...
125	..	..	0.2	..	..	...	...	0.15	...	...	...	...	1.29	..	...
144	..	..	†	†	†	...	...	†	†	†	...	...	†	†	†
200	..	..	...	0.2	0.5	...	...	...	0.05	0.02	...	...	...	0.04	0.20
300	..	..	...	0.2	0.5	...	...	...	0.04	0.03	...	...	...	0.04	0.34
350	..	..	0.3	..	..	...	...	0.20	...	...	...	...	2.12	...	...
400	..	..	...	0.2	0.6	...	...	...	0.04	0.02	...	...	...	0.04	0.18
500	..	..	0.3	0.4	0.7	...	...	0.18	0.04	0.02	...	...	2.17	0.04	0.22

*Analyses of oil samples from test with oil "H" were made in the laboratory of the company making the test on oil "H." However, check analyses made on several samples indicate that the results are very similar to those obtained in our laboratory, except that the neutralization numbers are somewhat higher than we would obtain. Analyses on all other oils made in our laboratory.

†In accord with the test procedure, filters were installed at 144 hours.

Automatic Fire Prevention for Trucks Discussed by Winchester at A.P.I.

AUTOMATIC sprinkling systems for putting out fires in and around tank trucks, and a special rubber compound to replace the usual metal conductor in dissipating static electricity from a truck or passenger car, are examples of new methods being used by the oil industry to prevent and extinguish fires involving its equipment.

These 2 developments were the highlights of a paper presented before the transportation session of the A. P. I. in annual convention at Chicago last week, by J. F. Winchester, manager, general automotive division, Standard Oil Co. of New Jersey.

Cleanliness and good mechanical condition of equipment were recognized as important features in preventing fires, particularly in the operation of a large number of vehicles handling inflammable material.

As an example of factors which might contribute to the fire hazard in truck operation, the author pointed to the following:

1. Brakes in poor condition are apt to cause brake fires.
2. Fuel lines breaking present a definite fire hazard.
3. Battery and ignition system must be kept in good order.
4. Long distance operations have found that tires heat and cause fire.
5. Short circuits may occur in various parts of the electrical system.
6. Carburetors which do not function properly, may cause backfire.
7. Exhaust pipes may become loose or the muffler may blow up.

It is to guard against such fires that vehicles are fitted with different types of fire extinguishing equipment, the speaker said.

Different methods which could be used in controlling fires, under certain conditions were listed as:

Plain Water.

Soda Acid.

Vaporizing Liquid (such as carbon tetrachloride, foam and carbon dioxide extinguishers).

Mr. Winchester said that if the average operator becomes thoroughly familiar with the apparatus which is supplied to take care of emergencies, a tank fire can and should be readily controlled.

As a part of the study into the fire fighting equipment on the trucks coming under his supervision, he said it was found a majority of the units were

J. F. Winchester

equipped with carbon tetrachloride extinguishers, whereas other operators were using carbon dioxide. In addition, many instances were found where compulsory regulation called for use of the carbon dioxide type.

"With these facts before us," he said, "we decided to take a second-hand unit and run some organized fires upon it, simulating as far as possible the exact conditions which might occur with a modern tank truck. This unit was set up in a remote place. Different types of fire fighting equipment were present and were experimented with in an orderly manner. The types of fires that were experimented with consisted of the following:

Fire in the Engine Compartment.
Fire under the main tank.
Fire in the meter or side carrying racks.
Fire at the dome covers.
Fires in the can box.

"We selected 2 types of personnel to operate the extinguishers and fight the fires—one of long service supposedly skilled through the methods of training that have been employed and one of short service classified as unskilled.

"The fires that were created were abnormal in character. To illustrate this point, in the case of the motor, we poured approximately two quarts of gasoline over it and while the fire was in progress continued to feed the fire with gasoline from an external source, simulating a broken gas line connection.

"The experiments indicated that the fires could properly be taken care of with all the types of extinguishing material listed above, provided a sufficient quantity was at hand, but the two that gave outstanding all-around service were carbon dioxide and the carbon tetrachloride types.

"In the case of the motor, considerable time was required to extinguish the fire. In the case of a fire around the tank truck, the early fires that were started could not be extinguished in their entirety because of the grease accumulation on the brake rod and underpart of the chassis behind the skirting of the streamlined truck.

"It was also found that this type of fire required the use of an abnormal amount of fire extinguishing material because of its inaccessibility and the large area that had to be covered. It was found that fires in the can box and in the side rack could be readily extinguished by the simple means of closing the doors, which resulted in the oxygen being exhausted and the fire dying out.

"During the test it was noticed that to properly control the engine fire it was necessary to lift the hood. To one who has experienced the lifting of a hood, it is a simple process, but to the inexperienced there appeared to be a danger of becoming burned, and I would say that a man who had been working around a tank truck who had on oily clothes would be taking an extreme chance in lifting a hood under such conditions as we created.

"The next problem that presented itself for thought was how to readily control a fire under the hood of a conventional truck or under the engine undercab type where no hood exists to lift and where the motor is very inaccessible. Also under the tank in the can boxes or at the domes. Naturally, if a fire occurred on the top of the tank truck, the average person or fireman would be concerned about approaching it for fear of an explosion.

"We who are familiar with the problem know that tank trucks are fitted with vents, fuel plugs, safety valves and numerous other devices, so we have little fear that an explosion will take place, and to us, the handling of such a fire seems comparatively simple.

"On the other hand, I have noticed that some regulatory authorities and persons responsible for enforcing the law, such as state police, in a number of instances, have come up to a tank truck fire on the highway, considered it dangerous, have taken their revolvers and punctured the tank in order to relieve the so-called pressure, which immediately started an even

Plate 1

Plate 2

Plate 3

Three views of a chemical spray system developed by Standard Oil Co. of New Jersey for extinguishing fire on tank trucks. Designed to use either carbon dioxide or carbon tetrachloride chemicals, these systems offer protection under engine hood, on top of and underneath the tank. Development of this new method for fighting tank truck fires is still in the experimental stage, although its practical application has been proved

greater conflagration that spread to adjacent property.

"To combat all of these conditions, we decided to carry forward some experiments that had been in my mind for a considerable period of time, but which up to that time I questioned the advisability of because of the possible expense involved, namely, to install in and around a complete tank truck unit a series of spray jets creating, if you please, an extinguishing system supplied with carbon tetrachloride or carbon dioxide, similar to the automatic sprinkler system within a factory or a public building.

"After installing this system, we then conducted a series of approximately 45 tests under variable conditions, which consisted of abnormal fires being created and then extinguished by the means of the newly designed apparatus. The results we found were the following: that severe fires in or around any part of the tank truck could be readily controlled, and the time required in each case was less than one minute. The amount of extinguishing material that was necessary to accomplish this was relatively small. The need for skilled application by personnel was eliminated.

"The accompanying plates, No. 1, 2 and 3 illustrate in a diagrammatic and schematic way the general manner in which a fire control system of the type we have been working on would eventually be installed upon a tank truck.

"These tests were conducted under the eyes of a considerable group of men associated with the petroleum industry, and from the comments which I have received up to the present time, it is my belief that a majority of them were impressed with the efficacy of this method of controlling tank truck fires, which can be even made more effective when the complete details and design of the system are worked out more thoroughly than was the case in these preliminary tests. These details and refinements of design needless to say are being carried forward at the present time.

"We therefore arrived at the conclusion that a ready means had been found to make a tank truck safer, and if adopted should offer a new method of property protection that should offset some of the proposed restrictive legislation that is being advocated in various parts of the country at the present time.

"Another interesting experiment that gives promise of economy in operation and will act as a means of fire prevention has been carried forward by us, namely, the use of a rubber compound to dissipate static in the place of metal conductor.

"One of the rubber companies called our attention to a discovery made by their development department which converted a natural electrical insulator into an electrical conductor, the basis of which has not been disclosed. They have stated as follows regarding this:

"We have found that a resistance of the order of 1,000,000,000 ohms or less will satisfactorily discharge most cases of car static within a period of time of one second. The Eliminators have a resistance of approximately 10,000 ohms when new. This large factor of safety is provided to take care of the following:

(a) a possible increase in resistance of 10 fold due to the effect of flexing in reducing conductivity.

(b) an increase in contact resistance of 10 fold due to the abrasion of the end which contacts the ground.

(c) an increase in contact resistance of 10 fold due to poor surface contact with the road which is essentially high resistance material.

(d) a factor of safety of 10 to insure good electrical performance throughout the life of the Eliminator.

Except for its lower electrical resistivity the compound we use does not differ greatly in hardness and in elastic properties from most Neoprene compounds. Ordinary rubber has a very high electrical resistivity extending from 10,000,000,000,000 ohms to an infinite value.

Up until our recent development of conducting rubber we have always known rubber for its excellent insulating properties.

The possibility of adopting this conducting compound for gasoline hose nozzles is entirely practical and this phase of the problem is in the hands of our Mechanical Goods Plant at Passaic.

In connection with our Static Shock Eliminator we have worked out two types—(1) for passenger cars, (2) for trucks. The passenger car type is made thin enough and light enough so that it is lifted off the ground by the air stream of the moving car and therefore does not create radio interference. The type for trucks and buses is much heavier and stiffer and is intended to remain in contact with the ground at all times.

Our method of testing the efficiency of conducting compounds is to artificially charge an automotive vehicle by means of a Wimshurst machine and then measuring the period of time required for a voltage drop from say 10,000 volts to 100 volts. This is purely empirical but has been found to be accurate enough."

Our division superintendents have used this material with satisfaction, and I expect in time that our entire operation will be fitted throughout with it. Static is to be covered in another paper that will be presented today. It is an elusive phenomena and a subject that needs study from a scientific standpoint. My experience indicates that units equipped with static eliminators have been the safe ones. With that as a background I cannot ignore a simpler method that has demonstrated to my satisfaction its worthiness.

Oil Industry Ready for Defense, Says Col. T. H. Barton

● "The Petroleum industry is in the best position of any basic industry to serve her country in defense," declared Col. T. H. Barton, El Dorado, Ark., president of Lion Oil Refining Co. in his address "Oil and Defense" at General Session, Nov. 13, of the 21st Annual Convention of the American Petroleum Institute at Chicago.

Col. Barton, citing the military service registration of 16,000,000 youths, said that they were not alone in their registration for service. "We of industry are all registered, ready to answer the call of our country when she needs our training, our skill, and the materials which come from the stills, the assembly lines, the presses and rollers of our factories."

"The petroleum industry is geared in every way to meet today's and future emergencies. . ." He added:

"The history of the oil industry has been a history of continuous demands upon its ingenuity, its inventive spirit, and its refusal to acknowledge defeat. As automotive engineers made continuous improvements in engine design and operation, petroleum scientists stood ready at every forward step with new fuels and lubricants to facilitate the operation of these new high-compression finely-geared engines. When aviation assumed national importance, the petroleum industry had already spent grueling hours in its laboratories and engineering offices to develop new processes which would make possible the manufacture of a higher octane fuel than had ever before been produced from crude oil.

Rebuilt More Efficiently

"Unhesitatingly it has junked still operative machinery to rebuild with more modern, more efficient units for the manufacture of better products—with the result that the prime characteristic of the modern refinery is a continuous state of construction and reconstruction.

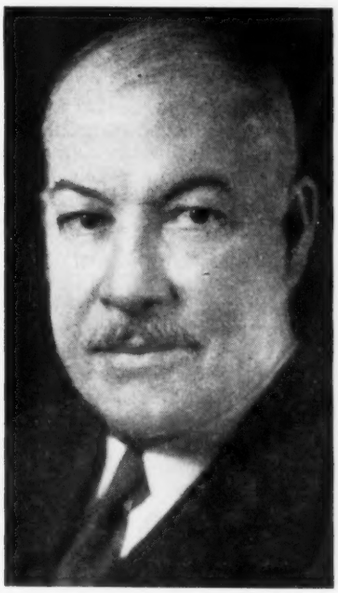
"Although governmental agencies of taxation have dipped deeply into its coffers, the petroleum industry has never been guilty of the attempt to replenish its till either from the wages of its employees or from the quality and price of its products.

"Evidence of its will to serve is in the fact that, while the petroleum industry doubled its services between 1923 and 1937, its share of the national income increased only 41%."

Figures given recently by George A. Hill of the Institute give additional illustration of this phase of the character of the petroleum industry, were cited by Col. Barton:

Industry Earns 2%

" 'The invested capital in the industry is $14,500,000,000 with an average of $14,500 per employee. A recent carefully prepared memorandum on this subject, by specialists engaged in making a study, records that during the past 18 years, while the oil industry was earning a total of $4,200,357,794, it was paying a total tax bill of $11,808,484,000—almost 3 times as much. The



Col. T. H. Barton

"STALLING ALL CARS! DON'T USE ANTI-FREEZE TILL YOU CLEAN OUT WITH SANI-FLUSH!"

The same compound you use to keep toilets sparkling-clean

Old Man Winter has two strikes on you if you put anti-freeze in a dirty radiator. Rust and scale choke the cooling system. The motor overheats. The customer wastes anti-freeze. He may freeze up, and blame you.

Stay on the safe side! Use Sani-Flush—the same preparation you use to keep comfort station toilets gleaming white. Your customers know Sani-Flush; it is advertised for automobile radiators in magazines having a total circulation of over 13 million. It is the only product being advertised consistently for cleaning out rust, sludge, sediment and scale from the cooling system. Sani-Flush costs 10c to clean out a car radiator (25c for the largest truck or tractor). This is a small part of the price of the job.

Buy Sani-Flush in grocery and hardware stores. 10c and 25c sizes. Also economical 25-lb. pails. Write for information. . . . The Hygienic Products Company, Canton, Ohio.

4 billion paid to the stockholders represented a return of about 2% a year on their average investment of 11 billion dollars, while the 12 billion dollars that went for taxes during the same period amounted to 6% of the same investment.

" 'These facts all show that the petroleum industry functions primarily not as a profit-making enterprise for the enrichment of its stockholders, but rather for the benefit of employees, stockholders, consumers, and the public.' "

The country may draw assurance, Col. Barton declared, from the industry's ability to meet demands of national welfare. He compared the oil industry's position today with that of 1917.

"Within the last two decades the number of producing oil wells in the United States has nearly doubled. Wells are drilled today 5 times as fast as 10 years ago. Continuous exploration is opening new fields, and scientific advancements have given us means of restoring productivity to old fields.

"The backlog of crude reserves for the future this year reached a figure estimated at eighteen and one-half billion barrels—three times greater than that of 1917.

"In the last war, an army division needed 4000 horsepower while today it needs 187,000 horsepower, and no other nation can even begin to support such equipment on its own oil resources.

"As of Jan. 1 this year, the daily total operating and shutdown capacity of United States refineries amounted to 4,628,646 bbls., or about 4 times the capacity in 1917.

"The 461 refineries in the nation, twice the 1917 figure, are distributed through 36 states, indicating the widespread availability of petroleum products."

Col. Barton quoted the following remarks from Business Week Magazine showing the ability of the petroleum industry to supply the demand for aviation fuel.

"The oil industry is equipped to make 2,000,000 gal. of 100-octane gasoline daily, a feat no other nation can perform, and can fuel 5 times the number of military planes now in service. With the fuel, a plane can fly 30% faster and farther in the United States than in Europe, can carry 20 to 30% more bombs, climb above anti-aircraft, fire 25% quicker, and its engines will last almost twice as long. The nation's refineries can expand present production 5 times to supply 50,000 planes."

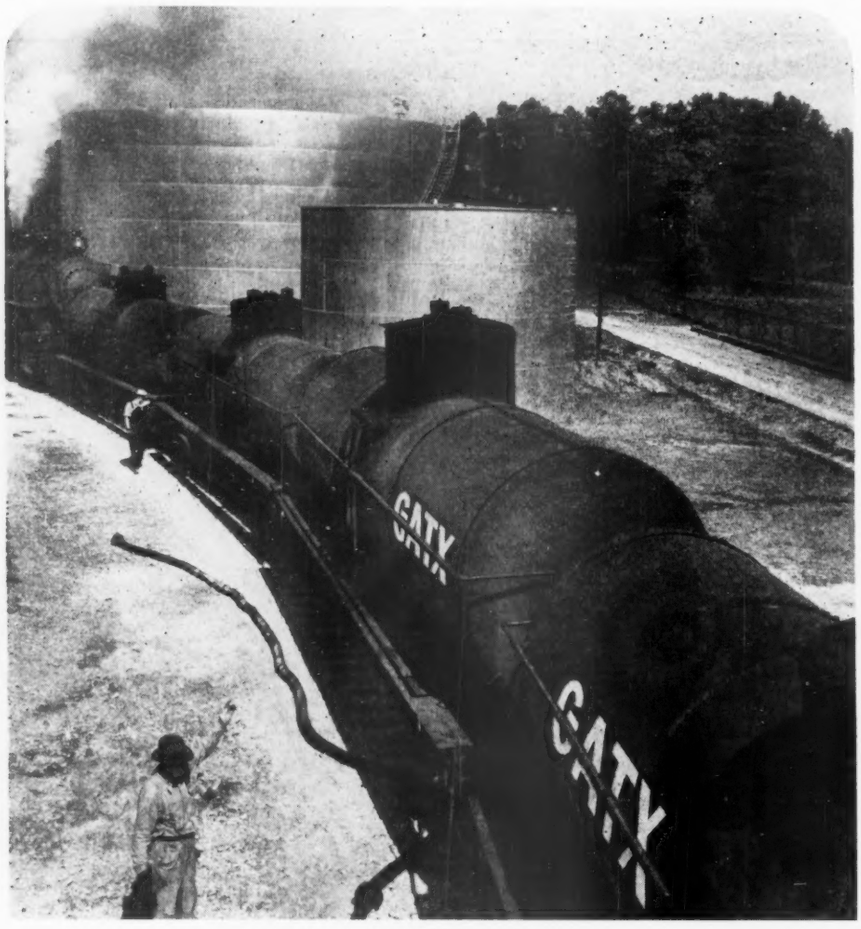
"We cannot overlook, as an important part of our service for defense, the great strides which have been made in the production of toluene and synthetic rubber from petroleum sources," the speaker declared.

The petroleum industry — with a minimum of reorganization and a relatively limited expansion of producing, refining, and transportation facilities— is adequately prepared for supplying not only vitally important military and industrial needs, but civilian requirements as well."

Measured against the yardstick of 12 principles set up by the National Defense Advisory Commission for awarding of defense contracts, Col. Barton declared that the industry stands fully prepared to meet emergency's need.

Complacency Not Recommended

He explained, however, that he was not recommending "foolish complacency with regard to this industry's ability to meet national needs. We must roll up our sleeves and accentuate our efforts for progress. We must maintain at all times harmony within our industry. We must emphasize strictest conservation. We must redirect our customary systems of operation with a view to the defense of America. And, above all, we must be motivated by the will to co-operate in every way with our chief executive, our Congress, and the splendid agencies which are directing the building of our defense machine.



Photograph by Robert Yarnall Richie

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A DIVISION OF GENERAL AMERICAN TRANSPORTATION CORPORATION

MARKETS

Mid-Western

CHICAGO, Nov. 16.—Demand for all grades of burner fuels increased throughout the middle west the past week, according to refiners and tank car marketers in Chicago. Several sellers said they expected to get higher prices in the near future.

Most suppliers also reported steady movement of kerosine, gasoline, and industrial fuels. Reports indicated that industrial fuels were scarce in the Chicago area. No changes in quotations were reported by refiners or tank car marketers.

Open spot sales reported by three Chicago marketers during the week totaled as follows: 5 cars of 72-74 oct. gasoline at 3.875c; 2 cars of 63-66 oct., 1 at 3.375c and 1 at 3.50c; 3 cars of 60 oct. and below at 3.25c; 1 car of Ethyl at 4.50c; 1 car of No. 2 straw fuel at 3.25c; and 3 cars of range oil at 3.50c, FOB Group 3.

Six marketers reported quoting 3.875c for 72-74 oct., 3.375 to 3.75c for 63-66 oct., 3 to 3.50c for 60 oct. and below, 3.125 to 3.375c for No. 2 straw, and 3.375 to 3.625c for range oil. Group 3 quotations reported by refiners ranged from 4.50 to 5c for 72-74 oct., 4.125 to 4.50c for 63-66 oct., 3.75 to 4.25c for 60 oct. and below, 3.375 to 3.50c for No. 2 straw, and two refiners reported quoting 3.625c for range oil.

California

LOS ANGELES, Nov. 16. — West Coast export markets continued quiet the past week, according to reports here. Offshore shipments consisted almost exclusively against contracts or on inter-company account, and were considerably under normal for the season, it was said. In recent weeks, exports to Japan have been consistently below corresponding period last year. No changes in quotations were reported.

Seasonal increase in demand was said to be responsible for firmness of fuel oil prices in the domestic market and for refusal of independent suppliers to enter into long term contracts at present prices. For immediate shipment, heavy grade fuel oil was quoted at $0.45 to $0.55 per bbl. and light grade oil at $0.55 to $0.65, at independent plants in the Los Angeles Basin, according to reports. In the San Joaquin Valley, the top figure for both grades was 5c per bbl. less than in the Basin area, it was said.

Small quantities of third grade gasoline were reported offered at 4.25c per gal. at the rack at some independent refineries in the Basin area with quotations reported ranging up to 4.75c. Tank wagon prices for "Q" and Ethyl gasolines in the same area were said to be, respectively, 5.75 to 7c and 6.75 to 8c.

Pennsylvania

CLEVELAND, Nov. 16.—Quotations reported by western Pennsylvania refiners for most products at the end of the past week were unchanged despite a 15c advance in crude prices announced by leading purchasers early in the week. About the only apparent effect of the crude advance was more active inter-refinery trading of lubes than for some weeks past, several refiners said.

Demand for gasoline, kerosine and fuel oils against contracts continued heavy, reports indicated, and inventories of these products were said to be in "excellent shape."

Late in the week, one refiner announced a 2c advance to 14c in his quotation for 25 p.t. bright stock, and another refiner announced a 1c advance to 22c in his quotation for 25 p.t. 200 vis. neutral. Quotations reported by other refiners ranged upward from 12c, and 21c, for the two products, respectively.

Gulf

NEW YORK, Nov. 16.—Gulf coast markets continued quiet the past week. No new inquiries or open spot cargo sales were reported here or from the southwest.

Refiners' asking prices for all refined products were reported unchanged. Some oil under contract was said to be moving to South America, and via California to Russia. With tanker rates mounting, however, buyers for the most part showed decided lack of interest, it was said.

One refiner reported selling 10,000 bbls. of No. 2 fuel oil. "market-price-date-of-lifting" for Nov. 12 loading. Asking prices reported by refiners for No. 2 ranged from 3.25 to 3.75c.

Mid-Continent

TULSA, Nov. 16.—Drop of 0.5c in Grade 26-70 natural gasoline prices highlighted Mid-Continent markets the past week. Early in the week, sales prices for Group 3 and Breckenridge origin points were reported off 0.25c at 2.50c and 2.25c, respectively. Later in the week another 0.25c cut was reported, bringing prices to 2.25c Group 3 and 2c Breckenridge. Total of 78 cars of Grade 26-70 were reported sold.

Cold weather sent already brisk burning oil shipments against contracts to much higher levels, refiners' reports indicated. Demand for range oil and No. 1 p.w. was especially heavy, it was said. Spot sale of 1 car No. 2 straw at 3.50c was reported by an Oklahoma refiner; other Oklahoma refiners reported quotations ranging from 3.375 to 3.625c.

Gasoline demand against contracts continued at or above seasonal expectations, although orders for northern shipment had slumped, most refiners said. No changes in quotations or open spot sales reported.

Atlantic Coast

NEW YORK, Nov. 16.—Light fuel oils were closely held by suppliers and prices were higher at some points along the Atlantic coast, according to reports here the past week. Some buyers and brokers said Nos. 2 and 3 fuels were not being readily offered at quotations reported by suppliers.

Nos. 2 and 3 fuels were quoted 0.25c higher at 4.50c at Philadelphia when several suppliers reported 0.25c advances in their prices. At New York harbor, prices were unchanged at 4.50c, tank cars, 4.40c, barges, according to reports.

Five suppliers reported withdrawing their quotations for 60-64 oct. gasoline at many points along the seaboard. Two suppliers also said they had withdrawn their quotations for 65-66 oct. Another supplier who had been out of the open spot market for some time said he was offering 68-70 oct. at 5.50c at Philadelphia and Baltimore; 6.25c at Tampa. His new prices at Philadelphia and Baltimore were 0.75c and 0.5c, respectively, below quotations reported by other suppliers.

REFINERY and SEABOARD PRICES

In bulk lots by Motor Transport, Tank Car, Barge or Tanker as shown

(NOTE—Parenthetical figures after prices indicate number of companies quoting when less than three companies are quoting.)

HOW PRICES ARE REPORTED—

Refinery and Seaboard prices in National Petroleum News are gathered by PLATT'S OILGRAM and are as published in the Monday issue of the OILGRAM.

PLATT'S OILGRAM is a reporting service issued in three identical editions daily from News Bureaus at New York, Cleveland, and Tulsa, Okla. PLATT'S OILGRAM gathers and publishes what its publisher and representatives believe to be accurate news of sales, prices and current happenings affecting the oil industry and that will be of interest to its subscribers. As this information is usually private, OILGRAM reports it according to what it is able to obtain from sources deemed reliable.

All information is supplied without guarantee as to its completeness, accuracy time of transmission or promptness of delivery.

The subscriber receives this information for his private use and not for resale or further distribution.

Publisher reserves the right to change the extent, nature and form of showing this information at any time.

Prices shown in the tables are quotations (meaning sellers' general offers or posted prices), or actual sales prices, reported to OILGRAM by refiners for "open spot" transactions, except as otherwise specified.

Prices arrived at by discounts off a specified price or "market date of shipment," prices named in contracts or prices arrived at in accordance with any arrangement made prior to date of sale, are not for "open spot" transactions and therefore are not considered in making the price tables. Prices made to brokers and prices in "inter-refinery" transactions are also not considered except as may be noted.

All prices are for "immediate" shipment except in Gulf Coast bulk transactions where shipment is generally to be made in ninety days. Prices are FOB refineries, pipelines, or tanker terminals in districts designated.

Prices shown are for quantities in bulk such as tank car lots, motor transport lots or barge lots; and in cents per gallon; heavy fuel oils are in dollars per barrel of 42 U.S. gallons; wax and petrolatums are in cents per pound. Prices applying to barges or cargoes only are so designated.

Prices do not include taxes or inspection fees. Prices are published at the close of the business day.

Mid-Western prices in the tables were gathered from refiners with offices located in Chicago and the surrounding territory. While the prices are quoted on a Group 3 (Oklahoma) freight basis, this is in accordance with the custom of the oil industry which uses Group 3 as a price basis for the ease of comparing prices even when the material originates in another refining district. Other refinery prices are given by and for the particular refining district where the material is made and from which it is shipped.

When prices obtained by OILGRAM do not conform to these conditions the exception and the new conditions are noted in the news lead or in conjunction with the price table by footnote or otherwise, for the particular refinery or sales district involved.

Crude oil and products covered by OILGRAM'S news and price service, except where noted, have been represented to the publisher as fully up to the customary trade specifications indicated and according to the generally accepted methods of test; and all crude oil and all products thereof as having been lawfully produced and transported.

Any apparent error should be reported to the nearest OILGRAM or National Petroleum News office at once as no correction will be made after the second issue of the OILGRAM or National Petroleum News following its publication.

Summary of Daily Gasoline Prices (Nov. 12 to Nov. 18)

U. S. Motor, (ASTM octane	Latest Prices Mon. Nov. 18	Nov. 15	Nov. 14	Nov. 13	Nov. 12
72-74 octane:					
Oklahoma	(u) 4.50 –5.00	(u) 4.50 –5.00	(u) 4.50 –5.00	(u) 4.50 –5.00	(u) 4.50 –5.00
Mid-Western (Group 3 basis)	4.50 – 5.00	4.50 – 5.00	4.50 – 5.00	4.50 – 5.00	4.50 – 5.00
N. Tex. (For shpt. to Tex. & N. M. dest'ns.)	4.50 – 5.25	4.50 – 5.25	4.50 – 5.25	4.50 – 5.25	4.50 – 5.25
W. Tex. (For shpt. to Tex. & N.M. dest'ns.)	5.00 (2)	5.00 (2)	5.00 (2)	5.00(2)	5.00(2)
63-66 octane:					
Oklahoma	4.125– 4.50	4.125– 4.50	4.125– 4.50	4.125– 4.50	4.125– 4.50
Mid-Western (Group 3 basis)	4.125– 4.50	4.125– 4.50	4.125– 4.50	4.125– 4.50	4.125– 4.50
N. Tex. (For shpt. to Tex. & N. M. dest'ns.)	4.125– 5.00	4.125– 5.00	4.125– 5.00	4.125– 5.00	4.125– 5.00
W. Tex. (For shpt. to Tex. & N. M. dest'ns.)	4.50 (2)	4.50 (2)	4.50 (2)	4.50 (2)	4.50 (2)
60 octane & below:					
Oklahoma	3.75 – 4.25	3.75 – 4.25	3.75 – 4.25	3.75 – 4.25	3.75 – 4.25
Mid-Western (Group 3 basis)	3.75 – 4.25	3.75 – 4.25	3.75 – 4.25	3.75 – 4.25	3.75 – 4.25
N. Tex. (For shpt. to Tex. & N. M. dest'ns.)	3.75 – 4.50	3.75 – 4.50	3.75 – 4.50	3.75 – 4.50	3.75 – 4.50
W. Tex. (For shpt. to Tex. & N. M. dest'ns.)	4.00 (2)	4.00 (2)	4.00 (2)	4.00 (2)	4.00 (2)
Motor Gasoline, 72-74 octane (ASTM):					
New York harbor	5.00 – 6.50	5.00 – 6.50	5.00 – 6.50	5.00 – 6.50	5.00 – 6.50
Philadelphia district	5.25 – 7.00	5.25 – 7.00	5.25 – 7.00	5.25 – 7.00	5.25 – 7.00
Baltimore district	5.50 – 7.00	5.50 – 7.00	5.50 – 7.00	5.50 – 7.00	5.50 – 7.25
Motor Gasoline:					
74-76 Octane: (L-3)					
Bradford-Warren (Western Penna.)	6.00	6.00	6.00	6.00	6.00
Other Districts (Western Penna.)	5.75 – 6.00	5.75 – 6.00	5.75 – 6.00	5.75 – 6.00	5.75 – 6.00
72-73 Octane: (L-3)					
Bradford-Warren (Western Penna.)	5.75 (2)	5.75 (2)	5.75 (2)	5.75 (2)	5.75 (2)
Other Districts (Western Penna.)	.....	.....	.....	.....	.....

REFINERY PRICES

Gasoline U. S. Motor (ASTM Octane) except where otherwise specified

Prices Effective	Nov. 18	Nov. 12
OKLAHOMA		
72-74 oct.	(u) 4.50 –5.00	(u) 4.50 –5.00
63-66 oct.	4.125– 4.50	4.125– 4.50
60 oct. & below	3.75 – 4.25	3.75 – 4.25
60-62 400 e.p.	4.00(2)	4.00 (2)
MID-WESTERN		
72-74 oct.	4.50 – 5.00	4.50 – 5.00
63-66 oct.	4.125– 4.50	4.125– 4.50
60 oct. & below	3.75 – 4.25	3.75 – 4.25
N. TEX. (For shpt. to Tex. & N. M. dest'ns.)		
72-74 oct.	4.50 – 5.25	4.50 – 5.25
63-66 oct.	4.125– 5.00	4.125– 5.00
60 oct. & below	3.75 – 4.50	3.75 – 4.50
60-62, 400 e.p.	4.25-4.75 (2)	4.25-4.75 (2)
W. TEX. (For shpt. to Tex. & N. M. dest'ns.		
72-74 oct.	5.00(2)	5.00 (2)
63-66 oct.	4.50(2)	4.50 (2)
60 oct. & below	4.00(2)	4.00 (2)
CENT. W. TEX. (Prices to truck transports		
72-74 oct. (L-3)	4.625(1)	4.625 (1)
67-69 oct. (L-3)	3.875(1)	3.875 (1)
62 oct. & below (L-3)	3.50(1)	3.50 (1)
KANSAS (For Kansas destinations only)		
72-74 oct.	4.8125– 5.125	4.875– 5.125
63-66 oct.	4.4375– 4.75	4.50 – 4.75
60 oct. & below	4.0125– 4.375	4.125– 4.375

Prices Effective	Nov. 18	Nov. 12
ARK. (FOB Ark. plant of one refiner, for shipment to Ark. & La.)		
72-74 oct.	4.625	4.625
70-72 oct.	4.50	4.50
60 oct. & below	4.125	4.125
WESTERN PENNA. (Motor gasoline.		
Bradford-Warren:		
74-76 oct. (L-3)	6.00	6.00
72-73 oct. (L-3)	5.75(2)	5.75 (2)
Other districts:		
74-76 oct. (L-3)	5.75 – 6.00	5.75 – 6.00
72-73 oct. (L-3)	.....	.....
Naphtha		
Untreated naphtha	5.50 – 5.75	5.50 – 5.75
Stoddard Solvent	6.00 – 6.25	6.00 – 6.25
CENTRAL MICHIGAN (f)		
U.S. Motor: (Oct. L-3)		
72-74 oct.	6.25 – 7.00	6.25 – 7.00
67-69 oct.	5.50 – 6.25	5.50 – 6.25
Str.-Run Gasoline	(g) 4.25–5.00	(g) 4.25–5.00
OHIO (S. O. Ohio quotations or statewide delivery and subject to exceptions for local price disturbances)		
72-74 oct.	7.125	7.125
CALIFORNIA U.S. Motor:		
58-61 grav., 375-400 e.p., 65 oct. & above	5.25 – 6.50	5.50 – 7.00
54-58 grav., for outside state shipment	4.50 – 5.50	5.00 – 6.00
54-58 grav., for instate shipment	4.25 – 5.25	4.50 – 5.50

Kerosine, Gas & Fuel Oils

Prices Effective	Nov. 18	Nov. 12
OKLAHOMA		
41-43 grav. w.w.	3.875– 4.00	3.875– 4.00
42-44 grav., w.w.	4.00 – 4.125	4.00 – 4.125
Range Oil	3.50 – 3.75	3.50 – 3.75
No. 1 P.W.	3.50 – 3.75	3.50 – 3.75
No. 1 straw	3.375– 3.50	3.375– 3.50
No. 2 straw	3.375– 3.625	3.375– 3.625
No. 2 dark	3.375(1)	3.375 (1)
U.G.I. gas oil	3.25(2)	3.25 (2)
No. 3 fuel	3.25–3.375(2)	3.25–3.375 (2)
No. 6 fuel	$0.55(1)	$0.55 (1)
14-16 fuel	$0.85(1)	$0.85 (1)
MID-WESTERN		
41-43 grav. w.w.	3.875– 4.125	3.875– 4.125
42-44 grav. w.w.	4.00 – 4.375	4.00 – 4.375
Range Oil	3.625(2)	3.625 (2)
No. 1 p.w.	3.50 – 3.75	3.50 – 3.75
No. 1 straw	.....	.....
No. 2 straw	3.375– 3.50	3.375– 3.50
No. 3	3.125– 3.375	3.125– 3.375
No. 5	$0.75(1)	$0.75 (1)
No. 6	$0.50(1)	$0.50 (1)
N. TEX. (For shpt. to Tex. & N. M. dest'ns.		
41-43 grav. w.w.	3.50 – 4.75	3.50 – 4.75
No. 1 P.W.	3.50–3.75 (2)	3.50–3.75 (2)
KANSAS (For Kansas destinations only)		
41-43 grav. w.w.	4.25(1)	4.25 (1)
42-44 gravity w.w.	4.125– 4.375	4.125– 4.375
No. 1 p.w.	3.75 – 3.875	3.75 – 3.875
No. 6 fuel	$0.60-$0.625 (2)	$0.60-$0.625 (2)

(f) Prices FOB Central Michigan refinery group basis for shipment within Michigan; shipments may originate at plants outside Central group. (g) Excluding Detroit shipment. (h) For shipment to Ark. points only. (u) One refiner reports quoting "4 to 4.50c" for 72-74 oct., the lower price applying only to shipment into restricted competitive areas.

REFINERY PRICES (Continued)

(NOTE—Parenthetical figures after prices indicate number of companies quoting when less than three companies are quoting.)

Kerosine, Gas & Fuel Oil

(Continued)

Prices Effective	Nov. 18	Nov. 12
ARK. (F.o.b. Ark. plant of one refiner for shipment to Ark. and La.)		
41-43 grav. w.w.	4.25	4.25
No. 1	3.625	3.625
No. 2	3.50	3.375
28-32 zero fuel	3.375	3.25
Tractor Fuel	(h)4.25	(h) 4.25
WESTERN PENNA.		
Bradford-Warren:		
45 grav. w.w.	5.125– 5.375	5.125– 5.375
46 grav. w.w.	5.375(1)	5.375 (1)
No. 1 fuel	5.00(2)	4.875–5.00 (2)
No. 2 "	5.00 – 5.25	4.875– 5.25
No. 3 "	4.875(1)	4.875 (1)
36-40 gravity	5.00 – 5.25	5.00 – 5.25
Other districts:		
45 grav. w.w.	4.875– 5.00	4.875– 5.00
46 grav. w.w.	4.875– 5.125	4.875– 5.125
47 grav. w.w.	5.00 – 5.25	4.875– 5.25
No. 1 fuel	4.625– 4.75	4.75 – 4.625
No. 2 "	4.50 – 4.625	4.50 – 4.625
No. 3 "	4.50(2)	4.50 (2)
36-40 gravity	(1) 4.25 – 4.375(1)	4.25 – 4.375
CENTRAL MICHIGAN (f)		
47-49 gravity w.w.	4.75 – 5.05	4.75 – 5.05
P.W. Distillate	4.75 – 5.00	4.75 – 4.875
No. 3 gas oil, Str.	4.25 – 4.50	4.25 – 4.50
U.G.I. gas oil	3.50 – 4.00	3.50 – 4.00
Fuel Oils (Vis. at 100):		
500-700 Vis.	3.00(1)	2.75–3.00 (2)
300-500 Vis.	2.75–3.25 (2)	2.75–3.25 (2)
100-300 Vis.	3.25–3.50 (1)	3.25–3.50 (1)
CALIFORNIA		
40-43 grav. w.w.	4.50 – 6.00	4.50 – 6.00
San Joaquin Valley:		
Heavy fuel	$0.45 –$0.70	$0.45 –$0.70
Light fuel	$0.55 –$0.75	$0.55 –$0.75
Diesel fuel	2.75 – 4.00	2.75 – 4.00
Stove dist.	2.75 – 5.00	2.75 – 5.00
Los Angeles:		
Heavy fuel	$0.45 –$0.70	$0.45 –$0.70
Light fuel	$0.55 –$0.75	$0.55 –$0.75
Diesel fuel	2.75 – 4.00	2.75 – 4.00
Stove dist.	2.75 – 4.00	2.75 – 4.00
San Francisco:		
Heavy fuel	$0.80	$0.80
Light fuel	$0.90	$0.90
Diesel fuel	4.50	4.50
Stove dist.	5.50	5.50

Note: All above heavy fuels meet Pacific specification 400; light fuel, spec. 300; Diesel fuels, spec. 200; and stove distillate, spec 100.

Lubricating Oils

WESTERN PENNA.

Prices are given by Penna. refiners as their quotations to jobbing and compounding trade only. Prices to other refiners generally are lower.

Viscous Neutrals — No. 3 col. Vis. at 70° F.

200 Vis. (180 at 100°) 420-425 fl.		
0 p.t.	24.50 (1)	24.50 (1)
10 p.t.	23.50 (1)	23.50 (1)
15 p.t.	22.50 (1)	22.50 (1)
25 p.t.	21.00–22.00	21.00
150 Vis. (143 at 100) 400-405 fl.		
0 p.t.	22.50 (1)	22.50 (1)
10 p.t.	21.50 (1)	21.50 (1)
15 p.t.	20.50 (1)	20.50 (1)
25 p.t.	19.00	19.00
Cylinder Stocks		
Brt. stk., 145-155 vis. at 210°, 540-550 fl., No. 8 col.		
10 p.t.	14.50 (1)	14.50 (1)
15 p.t.	13.50 (1)	13.50 (1)
25 p.t.	12.00 –14.00	12.00 –13.00
600 S.R. filterable	7.00 – 7.50	7.00 – 7.50
650 S.R.	8.00 – 8.50	8.00 – 8.50
600 fl.	9.00 – 9.50	9.00 – 9.50
630 fl.	11.00 –11.50	11.00 –11.50

MID-CONTINENT (F.o.b. Tulsa)

Neutral Oils (Vis. at 100° F. 0 to 10 P.P.)

Pale Oils:

Vis.	Color		
60-85—No. 2		5.25 – 5.75	5.25 – 5.75
86-110—No. 2		5.25 – 6.25	5.25 – 6.25
150—No. 3		8.00 –10.25	8.00 –10.25
180—No. 3		8.50 –10.50	8.50 –10.50
200—No. 3		8.50 –11.00	8.50 –11.00
250—No. 3		10.00 –12.00	10.00 –12.00
280—No. 3		10.50 –13.75	10.50 –13.75
300—No. 3		11.50 –14.25	11.50 –14.25

Lubricating Oils (Cont'd)

Prices Effective	Nov. 18	Nov. 12
Red Oils:		
180—No. 5	8.50–9.00 (2)	8.50–9.00 (2)
200—No. 5	8.50–10.00 (2)	8.50–10.00 (2)
280—No. 5	11.50–12.00 (2)	11.50–12.00 (2)
300—No. 5	11.00 –12.00	11.00 –12.00

Note: Viscous Neutrals, 15-25 p.p. generally are quoted 0.5c under 0-10 p.p. oils. Non-viscous oils, 15-25 p.p., generally are quoted 0.25c under 0-10 p.p. oils.

Bright Stock—Vis. at 210°		
200 Vis. D	18.00 (1)	18.00 (1)
150-160 Vis. D:		
0 to 10 p.p.	13.50 –16.00	13.50 –16.00
10 to 25 p.p.	13.00 –15.50	13.00 –15.50
25 to 40 p.p.	12.50–15.00 (2)	12.50–15.00 (2)
150-160 vis. E	12.50 –15.00	12.50 –15.00
120 Vis. D:		
0 to 10 p.p.	12.50 –15.25	12.50 –15.25
25 to 40 p.p.	14.375 (1)	14.375 (1)
600 S.R. Dark Green	7.00 (2)	7.00 (2)
600 S.R. Olive Green	8.00 – 9.50	8.00 – 9.50
631 S.R.	12.00 (1)	12.00 (1)
Black Oil	4.00–5.50 (2)	4.00–5.50 (2)

SOUTH TEXAS Neutral Oils

Vis.	Color		
Pale Oils: (*Vis. at 100°F*)			
100 No. 1½-2½		5.25 – 5.50	5.25 – 5.50
200 No. 2-3		7.25	7.25
300 No. 2-3		7.75	7.75
500 No. 2½-3½		8.50	8.50
750 No. 3-4		8.75	8.75
1200 No. 3-4		8.875	8.875
2000 No. 4		9.00	9.00
Red Oils:			
200 No. 5-6		7.25	7.25
300 No. 5-6		7.75	7.75
500 No. 5-6		8.50	8.50
750 No. 5-6		8.75	8.75
1200 No. 5-6		8.875	8.875
2000 No. 5-6		9.00	9.00

CHICAGO (From Mid-Continent p.l. crude

Neutra Oils (Vis. at 100° F. 0 to 10 p.p.)

Pale Oils			
Vis.	Color		
60-85—No. 2		7.25	7.25
86-110—No. 2		7.25	7.25
150—No. 3		8.50	8.50
180—No. 3		9.50	9.50
200—No. 3		10.00	10.00
250—No. 3		11.00	11.00
Red Oils:			
180—No. 5		9.50	9.50
200—No. 5		9.50	9.50
250—No. 5		11.00	11.00
280—No. 5		12.00	12.00
300—No. 5		12.00	12.00

Note: Viscous oils, 15 to 30 p.p. are quoted 0.5c lower; 60-85 and 86-110 No. 2 non-viscous oils, 15 to 30 p.p., 0.25c lower.

Unfiltered Steam Refined: (Viscosity at 210°)		
140	8.75	8.75
160	9.50	9.50
200	10.50	10.50
Bright stocks, 160 vis. at 210. No. 8 color:		
0 to 10 p.p.	15.00	15.00
15 to 25 p.p.	14.00	14.00
30 to 40 p.p.	13.50	13.50
E filtered Cyl. Stock	12.50	12.50

Note: To obtain prices delivered in Chicago add 0.25c per gal.

Natural Gasoline

(Group 3 & Breckenridge prices are to blenders on freight basis shown below. Shipments may originate in any Mid-Continent manufacturing district.)

FOB GROUP 3		
Grade 26-70	(k) 2.25	(k) 2.75
FOB BRECKENRIDGE		
Grade 26-70	(k) 2.00	(k) 2.00
CALIFORNIA (FOB plants in Los Angeles basin)		
75-85, 350-375 e.p. for blending	4.75 – 5.00	4.75 – 5.00

Naphtha and Solvent

Prices Effective	Nov. 18	Nov. 12
(FOB Group 3)		
Stoddard solvent	5.875	5.875
Cleaners' naphtha	6.375	6.375
V. M. & P. naphtha	6.375	6.375
Mineral spirits	5.375	5.375
Rubber solvent	6.375	6.375
Lacquer diluent	6.625– 7.375	6.625– 7.375
Benzol Diluent	7.875– 8.375	7.875– 8.375

Wax

White Crude Scale:

WESTERN PENNA. (Bbls., C.L., N. Y.)		
122-124 A.m.p.	2.85 – 3.00	2.85 – 3.00
124-126 A.m.p.	2.85 – 3.00	2.85 – 3.00
OKLAHOMA (Bbls. or burlap bags, C.L.)		
124-6 AMP.	3.00 (1)	3.00 (1)
131-3 AMP.	3.25 (1)	3.25 (1)

CHICAGO (FOB Chicago district refinery of one refiner, in bags or slabs loose, carloads. Melting points are EMP (ASTM) methods; add 3° F. to convert into AMP.)

Fully refined:		
122-124 (bags only)	5.60	5.60
125-127	5.60	5.60
127-129	5.85	5.85
130-132	6.15	6.15
132-134	6.40	6.40
135-137	7.15	7.15

Petrolatums

WESTERN PENNA. (Bbls., carloads; tank cars, 0.5c per lb. less.)		
Snow White	5.125– 6.125	5.125– 6.125
Lily White	4.375– 5.125	4.375– 5.125
Cream White	3.375– 4.125	3.375– 4.125
Light Amber	2.625– 3.00	2.625– 3.00
Amber	2.375– 2.875	2.375– 2.875
Red	2.125– 2.625	2.125– 2.625

Group 3 Freight Rates

To Division Headquarters Points of Standard Oil Co. of Indiana

	Gasoline-Kerosine		Distillate-Oil-Fuel		Gas Oil
	Cents per Cwt.	Cents per gal. 6.6 lbs.	Cents per Cwt.	Cents per gal. 7.4 lbs.	
Chicago, Ill.	40	2.640	32	2.368	
Decatur, Ill.	39	2.574	31	2.294	
Joliet, Ill	40	2.640	32	2.368	
Peoria, Ill	39	2.574	31	2.294	
Quincy, Ill.	36	2.376	29	2.146	
Indianapolis, Ind.	48	3.168	39	2.886	
Evansville, Ind.	46	3.036	37	2.738	
South Bend, Ind.	49	3.234	**42	**3.108	
Detroit, Mich.	64	4.224	51	3.774	
Grand Rapids, Mich.	58.5	3.861	**50	**3.700	
Saginaw, Mich	66	4.356	53	3.922	
Green Bay, Wis	51	3.366	41	3.034	
Milwaukee, Wis.	43	2.838	34.5	2.553	
LaCrosse, Wis	46	3.036	37	2.738	
Minneapolis-St. Paul	46	3.036	37	2.738	
Duluth, Minn	52	3.432	41.5	3.071	
Mankato, Minn	46	3.036	37	2.738	
Des Moines, Ia.	36	2.376	29	2.146	
Davenport, Ia	39	2.574	31	2.294	
Mason City, Ia.	42	2.772	33.5	2.479	
St. Louis, Mo.	33	2.178	26.5	1.961	
Kansas City, Mo.	28	1.848	22.5	1.665	
St. Joseph, Mo.	28	1.848	22.5	1.665	
Fargo, N. D.	63	4.158	50.5	3.737	
Minot, N. D.	83	5.478	66.5	4.921	
Huron, S. D.	53	3.498	42.5	3.145	
Wichita					
From Ponca City	7.5	*0.495	7.5	†0.555	
From Tulsa	12.5	*0.825	12.5	†0.925	
From Cushing	11	*0.726	11	†0.814	

*This rate also includes distillate rate at 6.6 lbs. per gal.

**This rate applies only to residual fuel and gas oil.

†This rate is exclusive of distillate which is based on 6.6 lbs. per gal. from Ponca City, Tulsa and Cushing, Okla., to Wichita. Includes only gas oil and fuel oil.

NOTE: There is no Group 3 rate to Wichita, Kans.

(f) Prices FOB Central Michigan refinery group basis for shipment within Michigan: shipments may originate at plants outside Central group. (g) Excluding Detroit shipment. (h) For shipment to Ark. points only. (i) Quotations. (j) Sale. (k) Sales. (l) Pittsburgh district prices excluded.

SEABOARD PRICES EXPORT AND COASTWISE

(NOTE—Parenthetical figures after prices indicate number of companies quoting when less than three companies are quoting.)

Atlantic Coast

(Prices are of refiners, FOB their refineries & their tanker terminals, & of tanker terminal operators, FOB their terminals)—Prices Effective Nov. 18

MOTOR GASOLINE

District:	Min. 80 Oct. '39 Research (Max. 2 cc. Lead)	72-74 Oct. (ASTM)	68-70 Oct. (ASTM)	65-66 Oct. (ASTM)	60-64 Oct. (ASTM)
N. Y. Harb.	5.75 (2)	5.00 – 6.50	5.00 – 5.50	5.00–5.50 (2)	.....
N. Y. Harb., barges	5.75 – 7.00	4.75 – 6.50	4.75 (2)	4.75–5.50 (2)	.....
Albany	5.70 (1)	5.60 – 5.80	.....	.....	.....
Philadelphia	5.75 – 7.25	5.25 – 7.00	5.50 – 6.75	.....	6.50 (1)
Baltimore	5.75 – 7.25	5.50 – 7.00	5.50–6.00 (2)	5.50 (1)	.....
Norfolk	5.75 – 7.50	5.50 – 6.75	6.00 – 6.50	5.50 (1)	.....
Wilm'ton	7.00 – 7.25	5.75 – 7.00	6.00 – 6.50	5.50 (1)	6.25 (1)
Char'ston	6.25–7.05 (2)	5.75 – 7.00	5.875–6.50 (2)	5.50 (1)	.....
Savannah	6.25–6.50 (1)	6.25 – 6.50	5.875–6.375	.....	6.00 (1)
Jacksonville	6.25–6.50 (1)	6.25 – 6.50	5.875– 6.25	.....	6.00 (1)
Miami	6.25–6.50 (1)	6.25 (1)	5.875–6.125 (2)	.....	.....
Tampa	6.25–6.50 (1)	6.25 (2)	5.875– 6.25	.....	.....
Pensacola	6.00–6.25 (1)	.....	5.50–5.75 (1)	.....	.....
Mobile	5.75–6.00 (1)	5.75 (2)	5.375–5.625 (2)	.....	.....
Portland	5.70 (2)	5.70 – 5.90	5.90 (1)	.....	.....
Boston	5.70 (2)	5.25 – 5.90	5.50 (1)	5.25 – 5.50	.....
Providence	5.60 (2)	5.70 – 6.50	.....	.....	.....

FUEL OILS

	KEROSINE and or NO. 1 FUEL	No. 2	No. 3	No. 5	No. 6
N. Y. Harb.	5.10 – 5.50	4.50	4.50	$1.35 –$1.55	$1.15 –$1.25
N. Y. Harb., barges	5.00 – 5.40	4.40	4.40	.....	.....
Albany	5.20	4.60	4.60 (1)	$1.85 (1)	$1.45 (1)
Philadelphia	5.00 – 5.50	4.50	4.50	$1.37 –$1.47	$1.15 –$1.25
Baltimore	4.75 – 5.50	4.25 – 4.50	4.25 – 4.50	$1.37 (1)	$1.15 –$1.25
Norfolk	4.75 – 5.50	4.25 – 4.50	4.25 – 4.50	.....	$1.25 (2)
Wilmington	4.75 – 5.25	4.25	.....	.....	.....
Charleston	4.75 – 5.50	4.25 (2)	.....	.....	$1.20 (2)
Savannah	5.00 – 5.25	.....	.....	.....	$1.20 (1)
Jacksonville	5.00 – 5.25	4.25 (1)	4.25 (1)	.....	$1.20 (1)
Miami	5.125–5.25 (2)	.....	.....	.....	.....
Tampa	5.00 – 5.25	4.25 (1)	.....	.....	$1.15 (1)
Pensacola	5.125–5.25 (1)	.....	.....	.....	.....
Mobile	4.875– 5.00	.....	.....	.....	.....
Portland	5.30	4.70	4.70	$1.85 (1)	$1.25 –$1.45
Boston	5.20	4.60	4.60	$1.55–$1.65 (2)	$1.25
Providence	5.20	4.60	4.60	$1.50 –$1.65	$1.25

	Bunker C Fuel Ships' bunkers (Ex Lighterage)	Diesel Oil Ships' bunkers (Ex Lighterage)	Diesel Oil Shore Plants	Gas House Gas Oil 28-34 Gravity
N. Y. harbor	$1.15 –$1.25	$1.85	4.50	4.60
Albany	$1.45 (1)	$1.85	4.60	....
Philadelphia	$1.15 –$1.25	$1.85 –$1.95	....	....
Baltimore	$1.15 –$1.25	$1.85	4.00	4.00
Norfolk	$1.25	$1.785–$1.85	4.00	4.00
Charleston	$1.20	$1.785–$1.85	4.00	4.00
Savannah	$1.20 (1)	$1.785–$1.90	....	....
Jacksonville	$1.20	$1.785–$1.95	....	....
Tampa	$1.15	$1.785–$1.95	....	....
Portland	$1.25 –$1.45	$1.95	4.70	4.80
Boston	$1.25	$1.85	4.60	4.70
Providence	$1.25	$1.85	4.60	4.70

New York Export Lubes

(Penna. Products in bbls. FAS New York)

Prices Effective	Nov. 18	Nov. 12
Bright stock:		
Light, 25 p.t.	20.50 (1)	20.50 (1)
Neutral oil:		
200 3 color, 25 p.t.	.....	.....
150 3 color, 25 p.t.	25.50 (1)	25.50 (1)
600 s.r., unfilt.	16.00 (1)	16.00 (1)
650 s.r., unfilt.	17.00 (1)	17.00 (1)
600 fl. s.r.	18.00 (1)	18.00 (1)
630 fl., s.r.	20.00 (1)	20.00 (1)

Wax

(A.S.T.M. Tests. Melting points, however, are A.M.P., 3° higher than E.M.P. Export prices, FAS, c.l. Domestic prices, FOB, refr'ies., in bags, c.l., with 0.2c discount allowed for shipment in bulk, except where noted. Scale solid; fully refined slabs in bags)

Prices Effective Nov. 18

	New Orleans Export	N. Y. Domestic	N. Y. Export
Crude Scale:			
124-6 Yellow	2.85-3.00 (1)	.....	2.85-3.00 (1)
122-4 White	.....	2.85-3.00	2.85-3.00
124-6 White	2.85-3.25 (2)	2.85-3.00	2.85-3.00
Fully Refined:			
123-5	....	5.60	5.60(2)
125-7	5.60(1)	5.60	5.60
128-30	6.15(1)	5.60–5.70(i)	5.60
130-2	6.15(1)	5.85(i)	5.85
133-5	6.40(1)	6.15(i)	6.15
135-7	7.15(1)	6.40(i)	6.40
108-11 White Match	....	....	3.25(l&j)

Naphtha

Prices Effective Nov. 18	V.M.&P. Naphtha	Mineral Spirits
Baltimore	9.50	8.00
New York Harbor	8.80 – 9.50	8.00 – 8.50
Philadelphia district	10.00	8.00 – 9.00
Boston	9.00	8.75 – 9.25
Providence	9.00	8.75
†Ohio points, delivered	8.75	*8.25

*This is on rubber solvent.

†Ohio prices are those of S. O. Ohio. Its prices for D.C. naphtha, special Varnolene, Varnolene and Sohio Solvent are same as for V.M.&P.

Pacific Export

(Quotations at seaboard, Los Angeles, cargo lots, except where otherwise noted.)

Prices Effective	Nov. 18	Nov. 12
375 e.p. blend, 70 oct.	4.50 – 5.625	4.50 – 5.625
390 e.p. blend, 68 oct.	4.375– 5.50	4.375– 5.50
390 e.p. blend, 66 oct.	4.375– 5.375	4.375– 5.375
400 e.p. blend, 65 oct. min.	4.25 – 5.25	4.25 – 5.25
U. S. Motor, under 65 octane	4.25 – 5.125	4.25 – 5.125
38-40 grav. w.w. kero., 150 fire point	4.50 – 5.00	4.50 – 5.00
41-43 grav., w.w. kero.	4.75 – 5.00	4.75 – 5.00
44 grav., w.w. kero	5.00 – 5.50	5.00 – 5.50
Diesel fuel, 24 & above	$1.25 –$1.30	$1.25 –$1.30
Diesel fuel, under 24	$1.15 –$1.25	$1.15 –$1.25
30-34 grav. diesel (gas oil) Pac. Spec. 200	$1.25 –$1.35	$1.25 –$1.35
Grade C fuel, Pac. Spec. 400	$0.60 –$0.65	$0.60 –$0.65
In Ships' Bunkers, or deep tank lots:		
Diesel fuel, Pac. Spec. 200	$1.35 –$1.45	$1.35 –$1.45
Grade C fuel, Pac. Spec. 400	$0.60 –$0.75	$0.60 –$0.75

Pacific Export (Cont'd)

Prices Effective	Nov. 18	Nov. 12
Cased Goods: (Per case)		
U. S. M.	$1.35 –$1.45	$1.35 –$1.45
375-400 e.p. blend, 65 oct. & above	$1.50 –$1.60	$1.50 –$1.60
400 e.p. blend, under 65 oct.	$1.40 –$1.50	$1.40 –$1.50
40-43 grav. w.w. kero., 150 fire point	$1.30 –$1.40	$1.30 –$1.40
Kero., p.w.	$1.25 –$1.35	$1.25 –$1.35

Tanker Rates

(Approximate rates. Cents per bbl.)

	Last Paid	Owners Ask
Gulf-N. Atlantic: (not E. of N.Y.)		
Hvy. Crude & fuel, (10 to 19.9 gravity)	51.5	..
Light Crude, (30 grav. or Lighter)	45	..
Gasoline	57	..
Kerosine	61	..
No. 2 Fuel	65	..

Gulf Coast

(Prices for sales made or firm offers reliably reported for sales pending in cargoes FOB ship at Gulf, for minimum of 20,000 bbls. Prices are by refiners only to other refiners, export agents, or to large tanker terminal operators at the customary trade specifications noted.)

Prices Effective Nov. 18

Motor Gasoline Domestic	
Min. 80 oct., '39 Research, max. 2 cc. lead	4.00 – 5.00
60-62, Gravity, Max. 400 e.p.	
72-74 oct. leaded (ASTM)	3.75 – 4.75
70 oct. unleaded "	4.25
68 oct. " "	3.75 – 4.75
65 oct. " "	3.625– 4.625
60 oct. " "	3.625– 4.50
41-43 w.w. kerosine	3.875– 4.00
No. 2 fuel	3.25 – 3.75
Gas Oil—Less than ½ of 1% sulfur	
Below 43 diesel index	3.125– 3.25
43-47 " "	3.125– 3.375
48-52 " "	3.125– 3.625
53-57 " "	3.50
58 & above diesel index	3.75
Diesel Oil, ships' bunkers (ex-lighterage)	$1.50 –$1.70
Bunker C, " " "	$0.80 –$0.90
Bunker C, cargoes	$0.80 –$0.85
Motor Gasoline Export	
60-62 Gravity, Max. 400 e.p.	
72-74 oct. leaded (ASTM)	3.75 – 4.75
70 oct. unleaded "	4.25
68 oct. " "	3.75 – 4.75
65 oct. " "	3.625– 4.625
60 oct. " "	3.625– 4.50
61-63 Gravity, Max. 390 e.p.	
72-74 oct. leaded (ASTM)	4.25
60 oct. unleaded "	4.00
64-66 Gravity Max. 375 e.p.	
72-74 oct. leaded (ASTM)	4.25
60 oct. unleaded "	4.00
41-43 w.w. kerosine	3.875– 4.00
Gas Oil—Less than ½ of 1% sulfur	
Below 43 diesel index	3.125– 3.25
43-47 " "	3.125– 3.375
48-52 " "	3.125– 3.625
53-57 " "	3.50
58 & above diesel index	3.75

MID-CONTINENT LUBES

(At Gulf; in packages, FAS.; in bulk FOB terminals)

	Nov. 18 New Steel Drums	Nov. 18 Bulk
200 vis. D. 210 brt. stock	25.50–25.80 (2)	19.80 (2)
150 vis. D 210 brt. stock 0-10 p.p.	21.50–21.80 (2)	15.80 (2)
10-25 p.p.	21.00 (1)	15.30 (1)
100 vis. D 210 brt. stock 0-10 p.p.	21.00 (1)	15.30 (1)
10-25 p.p.	20.50 (1)	14.80 (1)
200 vis. No. 3 col. neutral: 0-10 p.p.	17.00 (1)	11.30 (1)

SOUTH TEXAS LUBES

(Vis. at 100°, c. t. 0, blk exprt. shp., FOB terminals)

Unfiltered Pale Oils: Vis. Color	Nov. 18	Nov. 12
100 No. 3	6.00	6.00
200 No. 3	7.50	7.50
300 No. 3	8.00	8.00
500 No. 3½	9.00	9.00
750 No. 4	9.50	9.50
1200 No. 4	10.00 –11.00	10.00 –11.00
2000 No. 4	10.25	10.25
Red Oils:		
100 No. 5-6	6.00	6.00
200 No. 5-6	7.50	7.50
300 No. 5-6	8.00	8.00
500 No. 5-6	9.00	9.00
750 No. 5-6	9.50	9.50
1200 No. 5-6	10.00 –11.00	10.00 –11.00
2000 No. 5-6	10.25	10.25

(i) Shipments in bags or in bulk. (j) Shipment in tight barrels.

TANK WAGON PRICES

Commercial or consumer tank car, tank wagon, dealer, and service station prices for gasoline **do not include taxes;** *they do, however, include inspection fees as shown in general footnote. Gasoline taxes, shown in separate column, include 1.5c federal, and state taxes; also city and county taxes as indicated in footnotes. Kerosine tank wagon prices also do not include taxes; kerosine taxes where levied are indicated in footnotes. Dealer discounts are shown in footnotes; for commercial consumer discounts, see NPN for Feb. 21, 1940. These prices in effect Nov. 18, 1940 as posted by principal marketing companies at their headquarters offices, but subject to later correction.*

S. O. New Jersey

Esso (*Regular Grade*)

	Consumer Tank Car	Dealer T.W.	Gasoline Taxes	Kerosine T.W.
*Atlantic City, N. J.	6.5	8.1	4.5	7.7
*Newark, N. J.	6.5	8.1	4.5	7.7
Annapolis, Md.	7.35	8.85	5.5	9.5
Baltimore, Md.	6.75	8.25	5.5	8.5
Cumberland, Md.	8.15	9.65	5.5	10
Washington, D. C.	7	8.5	3.5	9.5
Danville, Va.	7.95	10.45	6.5	11
Norfolk, Va.	6.75	9.25	6.5	10.5
Petersburg, Va.	7.05	9.55	6.5	11.2
Richmond, Va.	7.05	9.55	6.5	10.5
Roanoke, Va.	8.25	10.75	6.5	11
Charleston, W. Va.	7.55	10.05	6.5	12.6
Parkersburg, W. Va.	6.85	9.35	6.5	11.2
Wheeling, W. Va.	7.85	10.35	6.5	11.8
Charlotte, N. C.	8.9	8	7.5	9.8
Hickory, N. C.	9.45	10.95	7.5	10.3
Mt. Airy, N. C.	9.3	8.5	7.5	10.2
Raleigh, N. C.	8.65	8.5	7.5	9.5
Salisbury, N. C.	8.95	7	7.5	9.9
Charleston, S. C.	6.75	9.25	7.5	9.25
Columbia, S. C.	7.6	10.1	7.5	11.5
Spartanburg, S. C.	8.3	10.8	7.5	12.2

	Mineral Spirits T.W.	V.M.P.& T.W.
Newark, N. J.	11.5	15.5
Baltimore, Md.	15.5	....
Washington, D. C.	15	....

Fuel Oils—T.W.	No. 1	No. 2	No. 3
Atlantic City, N. J.	7.7	6.5	6.5
Newark	7.7	6.5	6.5
Annapolis, Md.	...	6	...
Baltimore	6.75	6	5.5
Washington, D. C.	7	6.25	6.25
Norfolk, Va.	7	6	6
Petersburg	7.25	6.25	...
Richmond	7.25	6.25	6.25
Charlotte, N. C.	8.8	7.5	...
Hickory	...	7.75	...
Raleigh	8.5	7.25	....
Charleston, S. C.	8	6.5	...
Columbia	9	7.5	...
Spartanburg	9.8	8	...

*Effective Sept. 19, 1940, minimum retail resale price of 10.4c posted thru New Jersey.

Discounts:

Esso gasoline—to undivided dealers, 0.5c off dealer t.w. price, thru territory, except New Jersey. While above posted prices continue at Atlantic City and Newark, dealers will pay net price of 7.5c per gal. for Esso; dealers having pumps marked only Esso, Esso Extra and Standard White gasoline will pay 7c per gal. for Esso.

Kerosine—1c off t.w. price for 25 gals. or more, under contract thru territory (Baltimore city contract not necessary) except no discount in state of New Jersey.

Naphthas—To buyers taking following quantities at one time: Newark, 2c per gal. on 200 gals. or more, less than 200 gals. 0.5c higher price; Baltimore, 2c off on 25 to 100 gals. and 3c on over 100 gals.; Washington, 2c off to contract buyers.

Socony-Vacuum Oil Co., Inc.

Socony Mobilgas (*Regular Grade*)

	Com. T.C.	Com. Cons. T.W.	Div. Dlr. T.W.	Gasoline Taxes
New York City:				
Manhattan & Bronx	6.4	6.1	7	*5.5
Kings & Queens	6.4	6.1	7	*5.5
Richmond	6.4	6.1	7.2	*5.5
Albany, N. Y.	6.5	6.5	7	5.5
Binghamton, N. Y.	7.8	7.8	8.8	5.5
Buffalo, N. Y.	6.9	6.9	7.9	5.5
Jamestown, N. Y.	6.7	6.7	7.6	5.5
Plattsburg, N. Y.	6.7	7.4	8.4	5.5
Rochester, N. Y.	7.3	7.3	8.3	5.5
Syracuse, N. Y.	7	7	6.2	5.5
Bridgeport, Conn.	6.4	6.8	6.5	4.5
Danbury, Conn.	6.9	7	7.8	4.5
Hartford, Conn.	6.7	7	7	4.5
New Haven, Conn.	6.4	6.5	6.6	4.5
Bangor, Me.	6.3	7.3	8.3	5.5
Portland, Me.	5.9	7.4	7.9	5.5
Boston, Mass.	5.9	5.9	6.9	4.5
Concord, N. H.	7.1	7.7	8.7	5.5
Lancaster, N. H.	7.9	8.7	9.7	5.5
Manchester, N. H.	7	7.4	7.1	5.5
Providence, R. I.	5.9	6.2	7.4	4.5
Burlington, Vt.	7	7.4	6.8	5.5
Rutland, Vt.	7.1	7.6	6.8	5.5

	Mineral Spirits T.W.	V.M.&P. T.W.
Buffalo, N. Y.	9.4	10.1
†New York City	8.2	8.8
Rochester, N. Y.	10.2	10.9
Syracuse, N. Y.	11.1	11.8
Boston, Mass.	11	11
Bridgeport, Conn.	11.5	12
Hartford, Conn.	11	11.5
Providence, R. I.	11	12

	Kerosine & No. 1 Yard	T.W.	Mobilfuel Diesel T.C.	T.W.	Mobilheat Fuel Yard	T.W.
New York:						
Manhat'n&Bronx	...	7.9	...	...	...	6.4
Kings & Queens	5.4	7.9	...	...	...	6.4
Richmond	5.2	7.9	...	...	...	6.4
Albany	5.4	7.6	4.8	6.8	4.8	6.5
Binghamton	6.7	9	...	...	...	...
Buffalo	5.9	7.7	5.6	7.6	...	...
Jamestown	5.6	7.6	...	...	...	...
Plattsburg	6.2	8.2	...	...	...	...
Rochester	6.3	8.3	...	...	5.7	7.0
Syracuse	6.2	8.7	...	...	...	...
Conn:						
Bridgeport	5.8	7.8	...	...	...	...
Danbury	...	8.3	...	...	...	...
Hartford	5.5	7.5	...	7.2	5	6.7
New Haven	5.6	7.3	...	...	5.2	6.7
Maine:						
Bangor	6.1	8.1	...	...	5.5	7.0
Portland	5.7	8	5.1	7.1	...	...
Mass.:						
Boston	5.6	8	5	7	5	6.6
N. H.:						
Concord	6.6	8.6	...	...	...	...
Lancaster	7.6	9.6	...	...	...	...
Manchester	...	8.8	...	...	5.8	7.3
R. I.:						
Providence	5.6	8	5	7	5	6.5
Vermont:						
Burlington	6.2	8.2	...	...	5.6	7.2
Rutland	6.6	8.6	...	...	...	...

*Plus 2% city sales tax computed at time of each sale.

†Prices apply to consumers only in quantities over 1000 gals. annually; for quantities under 1000 gals. annually, add 0.5c per gal.

Discounts: Gasoline—To undivided dealers, 0.5c less than divided dealer t.w. Diesel—On t.w. deliveries, 0.5c for at least 400 gals.; 1c for full tank truck.

Atlantic Refining

Atlantic White Flash Gasoline (*Regular Grade*)

	Commercial T.C.	Dealer T.W.	Gasoline Taxes	Kerosine T.W.
Philadelphia, Pa.	7	8	5.5	10
Pittsburgh	7.5	9.5	5.5	10.5
Allentown	7.5	9	5.5	10.5
Erie	7	9.5	5.5	10
Scranton	6.4	6.9	5.5	10.5
Altoona	7.5	9.5	5.5	10.5
Emporium	7.5	9.5	5.5	10.5
Indiana	7.5	9.5	5.5	10.5
Uniontown	7.5	9.5	5.5	10.5
Harrisburg	7.5	9	5.5	10.5
Williamsport	7.5	9	5.5	10
Dover, Del.	...	8.5	5.5	10.5
Wilmington	...	8	5.5	10
Boston, Mass.	...	6.9	4.5	8
Springfield, Mass.	...	6.5	4.5	8.7
Worcester, Mass.	...	7.5	4.5	8.1
Fall River, Mass.	...	7.4	4.5	8.2
Hartford, Conn.	...	7	4.5	8.2
New Haven, Conn.	...	6.6	4.5	8.2
Providence, R. I.	...	7.4	4.5	8.2
Atlantic City, N. J.	...	7.5	4.5	7.7
Camden, N. J.	...	7.5	4.5	7.7
Trenton, N. J.	...	7.3	4.5	7.7
Annapolis, Md.	...	8.85	5.5	9.5
Baltimore, Md.	...	8.25	5.5	8.5
Hagerstown, Md.	...	9.35	5.5	10
Richmond, Va.	...	9.55	6.5	10.5
Wilmington, N. C.	...	9.35	7.5	8.8
Brunswick, Ga.	...	8	7.5	*9
Jacksonville, Fla.	...	7.5	8.5	10

	Mineral Spirits T.W.†	V.M.&P. T.W.†
Philadelphia, Pa.	12	14.5
Lancaster, Pa.	13.5	16
Pittsburgh, Pa.	14.5	14.5

Fuel Oils—T.W.	1	2	3	5	6
Phila., Pa.	8	6.5	6.5	4.25	3.50
Allentown, Pa.	8.5	6.5	6.5	....	....
Wilmington, Del.	8.00	6.5	6.5	....	....
Springfield, Mass.	8.7	7	7	....	....
Worcester, Mass.	8.1	6.8	6.8	....	....
Hartford, Conn.	8.2	6.7	6.7	....	....

*Does not include 1c Georgia kerosine tax.

†Mineral Spirits prices also apply to Stoddard Solvent; V.M.&P. prices also apply to Light Cleaners Naphtha.

Discounts:

‡Gasoline—to undivided dealers, 0.5c off dealer t.w., except Georgia & Florida dealer t.w. and undivided dealer t.w. prices are same.

Kerosine—Thru Penna. & Delaware, 2c off t.w. price on t.w. deliveries of 25 gals. or more at one time.

Naphthas—Philadelphia, 200 gals. or more at one time, 2c off, Lancaster, contract buyers taking 1000 gals. or more per year, one drum up, 2c off; non-contract buyers, 200 gals. or more at one time, 2c off. Pittsburgh, 500 gals. or more at one time, 2c off.

S. O. Ohio††

***Sohio X-70 Gasoline (*Regular Grade*)**

	Consumer T.W.	**Reselers	Gasoline Taxes ‡S.S.	†Kerosine T.W.
Ohio, Statewide	10.5	9	12.5	5.5	8
Akron	10.5	7.5	9.5	5.5	8
Cincinnati	10.5	7.5	10	5.5	8
Cleveland	10.5	8	11	5.5	8
Columbus	10.5	8	11	5.5	8
Dayton	10.5	7.5	10	5.5	8
Marietta	10.5	8	10.5	5.5	8
Portsmouth	10.5	9	12.5	5.5	8
Toledo	10.5	7.5	10	5.5	8
Youngstown	10.5	8	11	5.5	7.5

Esso Aviation Gasoline—Thru Ohio

	Consumer T.W.	Gasoline Taxes
74 octane	15.5	5.5
80 octane	16.5	5.5
87 octane	17.5	5.5

†Naphthas—Statewide	T.W
S.R. Solvent	12.75
D.C. Naphtha	13.25
V.M.&P. Naphtha	13.25
Varnolene	13.25
Sohio Solvent	13.25

Fuel Oils—T.W.	No. 1	No. 2	No. 3	No. 4
Ohio, Statewide	8.0	8.0	7.5	....
Toledo	7.5	7.5	7.0	....
Cleveland	9.5	9.5	9.0	6.75

*Renown (third-grade) prices are same as X-70 unless otherwise noted.

**Except authorized agents.

†Kerosine prices are ex 1c state tax. Naphtha prices are ex 1.5c federal & 4c state tax.

‡Prices at company-operated stations.

††Statewide prices are subject to exceptions other than those shown.

Discounts:

Esso aviation—on contract to hangar operators and resellers, 2c off consumer t.w.

Fuel Oils—Statewide and Toledo prices are for t.w. deliveries of less than 50 gals.; t.w. and drum deliveries of over 50 gals. are 0.5c less. Cleveland Nos. 1, 2, and 3 prices are for bulk deliveries of 5 to 99 gals.; 100 gals. and over are 2c less. Cleveland No. 4 price is for full compartment hose dump only.

Naphthas—to contract consumers off t.w. prices; 300 to 999 gals., 0.5c; 1000 to 2499 gals., 0.75c; 2500 to 4999 gals., 1c; 5000 or more gals., 1.5c.

S. O. Kentucky

Crown Gasoline (*Regular*)
Standard (*Third Grade*)

	†Net Dealer Crown	Standard	Gasoline Taxes	Kerosine T.W.
Covington, Ky.	7	6.5	6.5	9
Lexington, Ky.	9	7	6.5	9
Louisville, Ky.	8.5	6.5	6.5	8.5
Paducah, Ky.	7.5	7	6.5	8.5
Jackson, Miss.	8.5	7.5	7.5	*8.5
Vicksburg, Miss.	8.5	7.5	7.5	*8
Birmingham, Ala.	8	7	*8.5	9
Mobile, Ala.	6	5	*9.5	8
Montgomery, Ala.	9	7.5	*9.5	*9
Atlanta, Ga.	7.5	6.5	7.5	*7
Augusta, Ga.	9	8.5	7.5	*8.5
Macon, Ga.	7.5	6.5	7.5	*8
Savannah, Ga.	8	7	7.5	*8
Jacksonville, Fla.	7.5	6.5	8.5	8
Miami, Fla.	7.5	6.5	8.5	8
Pensacola, Fla.	8	7	*9.5	8
Tampa, Fla.	7.5	6.5	8.5	8

*Taxes: In tax column are included these city and county gasoline taxes: Mobile, 2c city; Birmingham, 1c city; Montgomery, 1c city and 1c county; Pensacola, 1c city. Georgia and Montgomery, Ala. have 1c kerosine tax, Mississippi 0.5c, not included in above prices.

†Consumer t.w. prices are same as net dealer prices.

S. O. Indiana

Red Crown (*Regular Grade*)
Stanolind (*Third Grade*)

	Red Dealer Prices Crown Cons. T.W.	Red Crown	Stanolind	Gasoline Taxes	Kerosine T.W.
Chicago, Ill.	11.1	8.1	6.4	4.5	10
Decatur, Ill.	10.1	8.6	6.2	4.5	9.5
Joliet, Ill.	11.1	9.6	6.7	4.5	10
Peoria, Ill.	11.1	8.7	8.1	4.5	10
Quincy, Ill.	10.9	9.4	6.2	4.5	9.8
Indianapolis, Ind.	11.3	9.3	8.9	5.5	*10
Evansville, Ind.	11.1	9.6	8	5.5	*9.8

(Continued on next page)

TANK WAGON PRICES

Commercial or consumer tank car, tank wagon, dealer, and service station prices for gasoline **do not include taxes;** *they do, however, include inspection fees as shown in general footnote. Gasoline taxes, shown in separate column, include 1.5c federal, and state taxes; also city and county taxes as indicated in footnotes. Kerosine tank wagon prices also do not include taxes; kerosine taxes where levied are indicated in footnotes. Dealer discounts are shown in footnotes; for commercial consumer discounts, see NPN for Feb. 21, 1940. These prices in effect Nov. 18, 1940 as posted by principal marketing companies at their headquarters offices, but subject to later correction.*

S. O. Indiana (Cont'd)

Red Crown (*Regular Grade*)
Stanolind (*Third Grade*)

	Red Crown Cons. T.W.	Dealer Red Crown T.W.	Dealer Stanolind T.W.	Gasoline Taxes	Kerosine T.W.
South Bend, Ind.	11.3	9.8	8.8	5.5	*10
Detroit, Mich.	9.6	8.1	7.1	4.5	7.6
Grand Rapids, Mich.	9.8	8.3	8	4.5	9.1
Saginaw, Mich.	0.4	8.9	8.4	4.5	9.1
Green Bay, Wis.	11.9	10.4	8.9	5.5	10.3
Milwaukee, Wis.	11.3	9.8	9.3	5.5	10.2
La Crosse, Wis.	11.5	10	9.5	5.5	10.4
Minneapolis-St. Paul.	11.5	9.7	7.3	4.5	10.4
Duluth, Minn.	11.9	10.4	9.9	4.5	10.8
Mankato, Minn.	11.5	10	8.5	4.5	9
Des Moines, Ia.	10.9	9.4	7.9	4.5	*9.8
Davenport, Ia.	11.1	9.6	8.1	4.5	*10
Mason City, Ia.	11.3	9.8	6.9	4.5	*10.2
St. Louis, Mo.	10.7	8.7	7	*4.5	9
Kansas City, Mo.	10.3	7.3	6.3	*4.5	8
St. Joseph, Mo.	10.4	8.5	7.5	*4.5	7.9
Fargo, N. D.	12.7	11.2	9	5.5	11.6
Huron, S. D.	12	10.5	10	5.5	10.9
Wichita, Kans.	9.3	7.8	5.5	4.5	7

Stanavo Aviation 73 Octane

Chicago, Ill.	14.9	
Detroit, Mich.	16.5	4.5
Milwaukee, Wis.	15.1	5.5
Minneapolis, Minn.	15.3	4.5
St. Louis, Mo.	14.5	3.5
Kansas City, Mo.	14.2	*4.5
Fargo, N. D.	16.5	5.5
Huron, S. D.	15.8	5.5

(Prices are base prices before discounts)

	Oleum Spirits	V.M.&P. Naphtha	Stanisol	*Taxes
Chicago	12.7	13	12.4	4.5
Detroit	15.2	14.2	15.7	4.5
K. C., Mo.	12.9	13.9	13.4	1.5
St. Louis	13.2	14.2	12.4	1.5
Milwaukee	13.8	14.8	14.3	5.5
Minnep'ls	14	15	12.7	4.5

†Fuel Oils—T.W.	No. 1 Fuel	Stanolex Furnace
Chicago	**6.75	6.75
Indianapolis	....	*7.5
Detroit	....	6.6
Milwaukee	8.2	7.7
Minneapolis	7.5	7.5
St. Louis	7.0	6.50
Kansas City	6.8	6.8

*Taxes: In gasoline tax column are included these city taxes—Kansas City, St. Joseph, and St. Louis, 1c. Indiana kerosine and fuel oil prices are ex 4c state tax: Iowa kerosine prices are ex 3c state tax. In naphtha tax column are included 1c federal tax and state taxes.

†Prices for small-lot deliveries range up to 2c higher than above prices.

**For 400 gals. & over; 150 to 399 gals., 7.25c; 100 to 149 gals., 7.5c; 1 to 99 gals., 8.5c.

S. O. Nebraska

Standard Red Crown Gasoline (*Regular Grade*)

	T.W.	Dealer	Gasoline Taxes	Kerosine T.W.
Omaha	10.9	9.4	6.5	9.5
McCook	10.5	7.9	6.5	9
Norfolk	11	8.9	6.5	9.9
North Platte	11.3	9	6.5	10.2
Scottsbluff	10.9	8	6.5	10.8

S. O. Louisiana

Esso (*Regular Grade*)

	Consumer Tank Car	Dealer T.W.	Gasoline Taxes	Kerosine T.W.
Little Rock, Ark.	6.75	8.5	8	10
Alexandria, La.	6.25	8.75	8.5	*9.5
Baton Rouge, La.	6.25	8.75	8.5	*9.5
New Orleans, La.	5.75	8.25	8.5	*9
Lake Charles, La.	6.25	8.75	8.5	*9
Shreveport, La.	5.5	8	8.5	*9
Lafayette, La.	6.5	9	8.5	*9
Bristol, Tenn.	9.75	10.25	8.5	12
Chattanooga, Tenn.	9	8.85	8.5	12
Knoxville, Tenn.	9.5	11.5	8.5	12.5
Memphis, Tenn.	7.5	9.5	8.5	11
Nashville, Tenn.	8.5	9	8.5	11

*New Orleans kerosine price is ex 1c parish tax, and all Louisiana kerosine prices are ex 1c state tax.

Discounts:

Esso gasoline—to undivided dealers, 0.5c off dealer t.w.

Humble Oil & Refining Co.

Humble Motor Fuel (*Regular Grade*)

	Tank Truck	Retail	Gasoline Taxes	Kerosine T.W.
Dallas, Tex.	6	10	5.5	6
Ft. Worth, Tex.	6	10	5.5	7
Houston, Tex.	7	11	5.5	8
San Antonio, Tex.	7	11	5.5	8

Thriftane (Leaded, 67 Octane, Purple Gasoline)

Dallas	5	8	5.5
Ft. Worth	5	8	5.5
Houston	5	8	5.5
San Antonio	5	8	5.5

74 Octane Aviation Gasoline, Clear

	Tank Car
FOB Baytown, Tex.	8.5

*To all classes of dealers & consumers.

The Texas Co.

	Gasoline—Dealer Fire-Chief (*Regular*)	T.W. Indian (*3rd Grade*)	Gasoline Taxes
Dallas, Tex.	6	5	5.5
Ft. Worth, Tex.	6	5	5.5
Wichita Falls, Tex.	7	5	5.5
Amarillo, Tex.	7	5	5.5
Tyler, Tex.	7	5	5.5
El Paso, Tex.	9	8	5.5
San Angelo, Tex.	7	5	5.5
Waco, Tex.	6.5	4.5	5.5
Austin, Tex.	7	5	5.5
Houston, Tex.	7	5	5.5
San Antonio, Tex.	7	5	5.5
Port Arthur, Tex.	7	5	5.5

Continental Oil

	Conoco Bronz-z-z (*Regular*) T.W.	Demand (*3rd Grade*) T.W.	Gasoline Taxes	Kerosine T.W.
Denver, Col.	9	8	5.5	10.5
Grand Junction, Col.	11	10	5.5	12.5
Pueblo, Col.	10	8	5.5	9
Casper, Wyo.	11	10	5.5	11.5
Cheyenne, Wyo.	9	8	5.5	11
Billings, Mont.	10	9	6.5	12
Butte, Mont.	9	8	6.5	13
Great Falls, Mont.	9	8	6.5	12
Helena, Mont.	9	8	6.5	12.5
Salt Lake City, Utah.	10.5	9.5	5.5	14
Boise, Ida.	*12.1	11.1	6.5	16
Twin Falls, Ida.	*13.1	*12.1	6.5	16.5
Albuquerque, N. M.	9	8	*7	9.5
Roswell, N. M.	7	6	*7	8
Santa Fe, N. M.	9.5	8.5	*7.5	9.5
Ft. Smith, Ark.	8	6.75	5.5	6.5
Little Rock, Ark.	8	5.5	8	8
Texarkana, Ark.	8	5.5	5.5	6
Muskogee, Okla.	8	7	5.5	7
Oklahoma City, Okla.	6	5.5	5.5	6.5
Tulsa, Okla.	7	6	5.5	6

Conoco Special Gasoline (Aviation)

	T.W.	Gasoline Taxes
Denver, Colo.	13.5	5.5
Cheyenne, Wyo.	15.5	5.5
Helena, Mont.	15.5	6.5
Salt Lake City, Utah.	18	5.5
Albuquerque, N. M.	14	*7

*Taxes: In gasoline tax column are included these city taxes—Albuquerque and Roswell, 0.5c; Santa Fe 1c. Idaho prices include 0.1c to cover 1-mill tax for toll bridges.

S. O. California

Standard Gasoline (*Regular Grade*)

	Tank Truck	Retail	Gasoline Taxes	Kerosine T.W
San Francisco, Cal.	12	13	4.5	11.5
Los Angeles, Cal.	11.5	12.5	4.5	10
Fresno, Cal.	13	14	4.5	12.5
Phoenix, Ariz.	14	15	6.5	*12.5
Reno, Nev.	14	15	5.5	13.5
Portland, Ore.	12.5	13.5	6.5	13.5
Seattle, Wash.	12.5	13.5	6.5	13.5
Spokane, Wash.	14	15	6.5	16.5
Tacoma, Wash.	12.5	13.5	6.5	13.5

Flight Gasoline (*Third Grade*)

San Francisco, Cal.	10	11	4.5	....
Los Angeles, Cal.	9.5	10.5	4.5	....
Fresno, Cal.	11	12	4.5	....
Reno, Nev.	12	13	5.5	....
Phoenix, Ariz.	11	12	6.5	....
Portland, Ore.	10.5	11.5	6.5	....
Seattle, Wash.	10.5	11.5	6.5	....
Spokane, Wash.	12	13	6.5	....
Tacoma, Wash.	10.5	11.5	6.5	....

Stanavo Aviation Gasoline

Phoenix, Ariz.	17.5	..	6.5	....
Los Angeles, Cal.	15	..	4.5	....
San Francisco, Cal.	15.5	..	4.5	....
Reno, Nev.	17.5	..	5.5	....
Portland, Ore.	16	..	6.5	....
Seattle, Wash.	16	..	6.5	....
Spokane, Wash.	19	..	6.5	....

*Taxes: Arizona kerosine prices are ex 5c state tax.

Discounts:

To 100% dealers—3c off t.w. on Standard and Stanavo Aviation; 2c off t.w. on Flight.

Canada

PRICES OF IMPERIAL OIL LTD.

Per Imperial Gallon, which is 1.2 U. S. Gallons

3-Star Imperial Gasoline (*Regular Grade*)

	T.W.	Gasoline Taxes	Kerosine T.W.
Hamilton, Ont.	16.5	8	17
Toronto, Ont.	16.5	8	17
Brandon, Man.	21	7	22.50
Winnipeg, Man.	20.5	7	22.5
Regina, Sask.	18	7	20
Saskatoon, Sask.	21	7	23
Edmonton, Alta.	18	7	20
Calgary, Alta.	16	7	18
Vancouver, B. C.	16	7	23
Montreal, Que.	16	8	16.5
St. John, N. B.	14.50	10	18
Halifax, N. S.	14.50	10	18

Discounts: Gasoline—Maritime Provinces—undivided & divided dealers, t.w. price; British Columbia—undivided and divided dealers, 2c off t.w. price; balance of territory—undivided dealers, 1c off t.w. price, divided dealers, t.w. price.

Price Changes

(These changes have been made in price tables)

S. O. New Jersey—Esso:

Mt. Airy dealer t. w. cut 2.3c, Nov. 12.
Salisbury dealer t. w. cut 0.5c, Nov. 13.

Socony-Vacuum—Mobilgas:

Manhattan & Bronx, Kings & Queens and Richmond consumer t. w. cut 0.1c, Nov. 14.
Albany t. c. & consumer t. w. up 0.2c, Nov. 14; dealer t. w. cut 0.3c, Nov. 4.
Plattsburg t. c., consumer t. w. & dealer t. w. up 0.2c, Nov. 13.
Bridgeport, Danbury, Hartford & New Haven t. c. & consumer t. w. up 0.2c, Nov. 13.
Bangor t. c. up 0.2c, consumer t. w. & dealer up 0.3c, Nov. 13.
Portland t. c. up 0.2c, consumer t. w. up 0.8c, dealer t. w. up 0.3c, Nov. 13.
Boston t. c. up 0.2c, consumer t. w. cut 0.2c, dealer t. w. up 0.3c, Nov. 13.
Concord and Lancaster t. c., consumer t. w., & dealer t. w. up 0.2c, Nov. 13.
Manchester t. c. up 0.2c, Nov. 13.
Providence t. c. & dealer t. w. up 0.2c, Nov. 13.
Burlington and Rutland t. c. & consumer t. w. up 0.2c, Nov. 13.

Atlantic Refining—White Flash:

Following dealer t. w. changes Nov. 14: Boston up 0.3c, Worcester 0.5c, Fall River & Providence 0.2c. Richmond & Wilmington, N. C. dealer t. w. cut 0.5c, Nov. 4.
Correction: Wilmington, Del. dealer t. w. price should have been 8c instead of 9.35c as reported in Nov. 13 NPN.

S. O. Kentucky—Crown:

Birmingham cut 1c, Oct. 30.
Augusta cut 0.5c, Oct. 31.

S. O. Kentucky—Standard:

Birmingham cut 1c, Oct. 30.

Continental Oil—Bronz-z-z:

Great Falls t. w. cut 2c, Nov. 5.

Continental Oil—Demand:

Great Falls t. w. cut 1.5c, Nov. 5.

CRUDE OIL PRICES

Prices in $ per bbl. of 42 U. S. gals. at the well. A. P. I. gravity. Prices are effective as of 7 a. m. of dates as given

EASTERN & CENTRAL STATES FIELDS

PENNSYLVANIA GRADE

Posted by Jos. Seep Purch. Agency (Nov. 12, 1940)

Bradford-Allegany $2.00
Southwest Penna $1.65
Eureka (West Va.) $1.59
Corning, O. (Nov. 4, 1939) $1.12

Posted by Tide Water Assoc. Oil Co. (Nov. 12, 1940)

Bradford-Allegany $2.00

Posted by The Pennzoil Co. (Nov. 12, 1940)

National Transit $1.93*

Posted by Valvoline Pipe Lines (Nov. 12, 1940)

Bradford (Elk & McKean Counties, Pa.) $2.00
Warren, Forest, Venango, Clairon & Butler Counties, Pa $1.93
Allegheny, Beaver, Washington & Greene Counties, Pa $1.65
West Virginia $1.59
South Eastern Ohio $1.55

*Applies to Cochran, Franklin, Hamilton & Doolittle districts; prices in other lower districts range down to $1.88 per bbl. at well.

MICHIGAN

Posted by Pure Oil Co. (Aug. 24, 1940)

Midland, Midland County $1.12
Sherman $1.07
Clare-Freeman $1.07

Posted by Simrall Corp. (Aug. 24, 1940)

Crystal, Greendale, Porter, Vernon and Wise $1.12
Beaverton, Buckeye, Bentley, Edenville $1.10
Freeman and Redding $1.07
Arenac $0.92
West Branch $0.92

Posted by Sohio Corp. (Michigan Division)

Allegan & Kent Counties (Aug. 24, 1940) $1.18
Van Buren County (Nov. 1, 1940) $1.18

Posted by Bay Pipe Line Corp. (Aug. 24, 1940)

Bentley and Buckeye $1.10
Saginaw and Wise ..... $1.12 Clare $0.81

ILLINOIS-INDIANA-KENTUCKY

Posted by Sohio Corp.

Illinois Basin, including Griffin pool (Aug. 21, '40) $1.15
Carmi, Storms, Ill. area (Nov. 1, '40) 1.05
Birk City, Ky. area (Aug. 21, '40) 1.05
Corydon, Ky. area, Henderson (Aug. 21, '40) 1.05

Posted by Ohio Oil Co.

Illinois Basin (Aug. 21, '40) $1.15
Illinois & Western Indiana (Aug. 23, '40) 1.00

Posted by Carter Oil Co. (Aug. 21, '40)

Louden, Fayette Co. Ill. $1.15

Posted by Mohawk Oil Lines, Inc. (Aug. 21, '40)

So. Illinois heavy ..... $1.05 Light $1.15

Posted by Ashland Oil & Transp. Co.

Somerset oil in Ashland Lines, Ky.: (Aug. 21, '40)

Big Sandy River ..... $1.12 Kentucky River $1.20

Posted by Owensboro-Ashland Co.

Owensboro, Ky. area (Aug. 21, '40) $1.10

MID-CONTINENT

OKLAHOMA-KANSAS-NORTH TEXAS

(See below for companies posting and effective dates)

Gravity	Schedule No. 1	Schedule No. 2	Schedule No. 3	Schedule No. 4	Schedule No. 5
Below 21	$0.70	$0.60	....	....	$0.63
21-21.9	.72	.63	....	....	.65
22-22.9	.74	.66	....	....	.67
23-23.9	.76	.69	....	....	.69
24-24.9	.78	.72	....	....	.71
25-25.9	.80	.75	....	$0.58	.73
26-26.9	.82	.78	....	.63	.75
27-27.9	.84	.81	....	.68	.77
28-28.9	.86	.84	$0.86	.73	.79
29-29.9	.88	.87	.88	.78	.81
30-30.9	.90	.90	.90	.82	.83
31-31.9	.92	.92	.92	.86	.85
32-32.9	.94	.94	.94	.90	.87
33-33.9	.96	.96	.96	.96	.89
34-34.9	.98	.98	.98	.98	.91
35-35.9	1.00	1.00	1.00	1.00	.93
36-36.9	1.02	1.02	1.02	1.02	.95
37-37.9	1.04	1.04	1.04	1.04	.97
38-38.9	1.06	1.06	1.06	1.06	.99
39-39.9	1.08	1.08	1.08	1.08	1.01
40 & above	1.10	1.10	1.10	1.10	1.03

Above schedules posted by:

No 1: S. O. Indiana Oct 17, '38 in Okla. & Kans.

No. 2: Carter Oct. 13, '38 in Okla.; Magnolia Oct. 12, '38 in Okla.; Shell Oct. 22, '38 in Okla. & Kans.

No. 3: Continental Oct. 11, '38 in Okla. & Kans. with lowest grade Below 29; Texas Co. Oct. 12, '38 in Okla. & Kans.

No. 4: Sinclair-Prairie Aug. 31, '39 in Okla. & Kans.

No. 5: Stanolind Sept. 1, '40 in N. Texas; Continental Oct. 11, '38 in N. Texas; Texas Co. Oct. 12, '38 in N. & N. Central Texas; Magnolia Dec. 3, '38 in N. & N. Central Texas; Sinclair-Prairie July 16, '40 in Mexia & N. Central Texas. Texas Co.'s lowest grade is 28-28.9 at $0.79; Continental, Magnolia and Sinclair-Prairie postings begin with Below 29 at $0.79.

TEXAS & NEW MEXICO FIELDS

Posted by Humble Oil & Refining Co. (Oct. 2, '39)

Gravity	West Central Texas	East Central Texas	Gray County	Carson-Hutchinson Counties	Tomball, etc.	W. Texas & N. Mexico	Texas Gulf Coast & Mirando	Anahuac-Dickinson	Refugio
Below 20	....	....	....	....	....	$0.53	$0.86	$0.81	$0.91
20-20.9	....	....	....	....	....	.55	.88	.83	.93
21-21.9	....	....	....	....	....	.57	.90	.85	.95
22-22.9	....	....	....	....	$0.95	.59	.92	.87	.97
23-23.9	....	$0.78	....	....	.97	.61	.94	.89	.99
24-24.9	$0.71	.80	....	....	.99	.63	.96	.91	1.01
25-25.9	.73	.82	....	....	1.01	.65	.98	.93	1.03
26-26.9	.75	.84	....	....	1.03	.67	1.00	.95	1.05
27-27.9	.77	.86	....	....	1.05	.69	1.02	.97	1.07
28-28.9	.79	.88	$0.72	$0.67	1.07	.71	1.04	.99	1.09
29-29.9	.81	.90	.74	.69	1.09	.73	1.06	1.01	1.11
30-30.9	.83	.92	.76	.71	1.11	.75	1.08	1.03	1.13
31-31.9	.85	.94	.78	.73	1.13	.77	1.10	1.05	1.15
32-32.9	.87	.96	.80	.75	1.15	.79	1.12	1.07	1.17
33-33.9	.89	.98	.82	.77	1.17	.81	1.14	1.09	1.19
34-34.9	.91	1.00	.84	.79	1.19	.83	1.16	1.11	1.21
35-35.9	.93	1.02	.86	.81	1.21	.85	1.18	1.13	1.23
36-36.9	.95	1.04	.88	.83	1.23	.87	1.20	1.15	1.25
37-37.9	.97	1.06	.90	.85	1.25	.89	1.22	1.17	1.27
38-38.9	.99	1.08	.92	.87	1.27	.91	1.24	1.19	1.29
39-39.9	1.01	1.10	.94	.89	1.29	.93	1.26	1.21	1.31
40 & above	1.03	1.12	.96	.91	1.31	.95	1.28	1.23	1.33

W. Central Tex. includes crudes purchased in Brown, Callahan, Coleman, Comanche, Eastland, Fisher, Haskell, Jones, Shackelford, Stephens, Throckmorton & Young Cos., Tex.

E. Central Tex. includes crudes purchased in Anderson, Cherokee, Limestone & Navarro Cos., Tex.

W. Tex. & N. Mex. includes crudes purchased in Andrews, Crane, Crockett, Ector, Gaines, Glasscock, Howard, Reagan, Upton, Winkler & Yoakum Cos., Tex. & Lea Co., N. Mex.

Tex. Gulf Coast includes crudes purchased in Goose Creek, Sugarland, Thompsons, Mykawa, Amelia, Webster & Clear Lake fields.

Anahuac-Dickinson includes crudes purchased in Gillock, Cedar Point, Fairbanks, Turtle Bay, Hull, Pierce Junction & Raccoon Bend (Shallow Sand) fields.

Refugio includes crudes purchased in Saxet, East White Point, Greta, O'Connor-McFadden, Taft, Plymouth & Tom O'Connor fields.

Mirando includes crudes purchased in Duval, Jim Hogg, Webb & Zapata Cos., Tex. & in Heyser & Placedo fields

Postings for Raccoon Bend (Deep Sand) & Satsuma crudes are same as for Tomball.

East Texas $1.10
Van ..... .93
Pecos ..... .78
Talco $0.65
Conroe 1.27
Hardin 1.10
Flour Bluff & Jim Wells Cos. $1.23
Salt Flat, Darst Creek, Hilbig, Carroll, Clark & Zoboroski ..... .96

MAGNOLIA PETROLEUM CO.

Gray, Carson & Hutchinson Cos., Tex.—Dec. 3, '38—same as Humble.

Tomball, Tex.—Dec. 3, '38—same as Humble.

West Texas—Oct. 12, '38, in Crane, Glasscock, Howard, Mitchell, Upton & Winkler Cos. — same as Humble except Magnolia begins with Below 25 at $0.63.

N. Mexico—Oct. 15, '39, in Lea Co. — same as Humble except Magnolia begins with Below 25 at $0.63 and ends with 36 & above at $0.87.

Mirando, Tex.—Oct. 2, '39—same as Humble.

Beaumont, Tex.—Oct. 2, '39—same as Humble Texas Gulf Coast.

Cass & Panola Cos., Tex.—Oct. 12, '38—Below 25 grav. oil at $0.73, plus 2c per degree of gravity to top of 40 & above at $1.05.

Following Tex. postings Oct. 12, '38:

East Texas $1.10
Darst Creek ..... .96
Luling ..... .87
Lytton Springs ..... .99
Cleveland (Liberty Co.) $1.14
Hardin (Liberty Co.) 1.02

SINCLAIR-PRAIRIE OIL MARKETING CO.

Gray, Carson & Hutchinson Cos., Tex.—
Aug. 31, '39—same as Humble.

West Texas & Lea Co., N. Mex.—Aug. 31, '39—same as Humble, except Sinclair begins with Below 25 at $0.63 and ends with 36 & above at $0.87.

Texas Gulf Coast—Oct. 3, '39—same as Humble.

East Texas (Oct. 2, '39) $1.10
Eddy Co., N. Mex. (Aug. 31, '39) ..... .77
Long Lake, in Anderson, Leon & Freestone Cos., Tex. (Jan. 20, '40) $1.08

STANOLIND OIL PURCHASING CO.

Tomball, Tex.—Aug. 29, '39—same as Humble except Stanolind begins with Below 29 at $1.07.

Texas Gulf Coast—Oct. 3, '39, in Clinton field—same as Humble Texas Gulf Coast except Stanolind begins with Below 21 at $0.88.

West Beaumont, Jefferson Co., Tex.—Oct. 2, '39—same as Humble Texas Gulf Coast.

THE TEXAS CO.

(Effective Oct. 2, '39)

Panhandle, Tex.—Sweet crude same as Humble's Gray Co. except Texaco begins with 34-34.9 at $0.84. Sour crude same as Humble's Carson & Hutchinson Cos. except Texaco begins with 34-34.9 at $0.79.

West Texas & Lea Co., N. Mex.—Same as Humble except Texaco begins with Below 26 at $0.65 and ends with 36 & above at $0.87.

Texas Gulf Coast—Same as Humble except Texaco ends with 34 & above at $1.16.

Mirando-Duval, Tex.—Same as Humble except Texaco ends with 28 & above at $1.04.

Refugio, Tex.—Same as Humble except Texaco ends with 28 & above at $1.09.

Following Tex. postings Oct. 12, '38:

East Texas $1.10
Darst Creek ..... .96
Cass Co. $1.05
Conroe 1.27

SHELL OIL CO., INC.

West Texas & Lea Co., N. Mex.—Aug. 29, '39, & Yoakum Co., Tex. Sept. 1, '39—same as Humble except Shell ends with 36 & above at $0.87.

Fisher Co., Tex.—Aug. 29, '39—Below 25 grav. at $0.68, plus 2c per degree of gravity up to 40 & above at $1.00.

Following Tex. postings Oct. 5, '39:
East Texas $1.10
Livingston area, Polk Co. 1.10

Following Tex. postings Aug. 29, '39:
Pecos Co., except Yates Shallow pool $0.78
Pecos Co., Yates Shallow pool ..... .65

CONTINENTAL OIL CO.

Eddy Co., N. Mex.—Apr. 22, '40—Begins with 28-28.9 at $0.61, plus 2c per degree gravity up to 40 & above at $0.85.

Mirando, Tex.—Oct. 2, '39—same as Humble.

Refugio, Tex.—Oct. 2, '39—same as Humble.

PAN AMERICAN PIPE LINE CO.

Hastings & So. Houston, Tex. crudes—Oct. 1, '40—same as Humble Texas Gulf Coast except Pan Am. begins with Below 21 at $0.88.

Cayuga, Anderson Co., Tex.—Oct. 2, '39—$0.78.

CRUDE OIL PRICES *(Continued from preceding page)*

CALIFORNIA *Posted by Standard Oil of California*

All gravities above those quoted take highest price offered in the field. Prices effective Feb. 1, 1940

Gravity	Signal Hill (Long Beach) and others*	Seal Beach	Huntington Beach	Inglewood	Playa Del Rey	Olinda Brea Canon	Athens-Rosecrans	Torrance	Richfield	Whittier East Coyote (La Habra)	Montebello	West Coyote Hills	Santa Fe Springs	Greeley Canal	Coles Levee Richfield Western	Mountain View and others**	Elk Hills	Buena Vista Hills, Midway-Sunset, Lakeview Area	Lost Hills	Coalinga	Wheeler Ridge	Santa Maria Val. (Union Oil, Sept. 1 '39)
14-14.9	$0.65	$0.64	$0.63	$0.64	$0.65	$0.61	....	$0.65	$0.61	$0.61	$0.62	$0.63	....	....	....	$0.60	$0.60	$0.60	$0.60	$0.60	....	$0.42
15-15.9	.65	.64	.63	.64	.65	.61	....	.65	.61	.61	.62	.63	....	....	....	.60	.60	.60	.60	.60	....	.44
16-16.9	.65	.64	.63	.64	.65	.61	....	.65	.61	.61	.62	.63	....	....	....	.60	.60	.60	.60	.60	....	.45
17-17.9	.65	.64	.63	.68	.65	.61	....	.65	.61	.61	.62	.63	....	....	....	.60	.60	.60	.60	.60	....	.46
18-18.9	.65	.64	.63	.71	.65	.65	....	.68	.61	.61	.62	.63	....	....	....	.60	.60	.60	.60	.60	....	....
19-19.9	.69	.64	.67	.75	.70	.69	....	.72	.61	.65	.62	.63	....	....	....	.60	.64	.64	.64	.61	$0.60	....
20-20.9	.73	.64	.72	.79	.76	.74	....	.75	.65	.69	.62	.67	....	....	....	.60	.69	.69	.69	.62	.60	....
21-21.9	.78	.64	.76	.82	.81	.78	....	.79	.69	.73	.62	.72	$0.63	....	....	.64	.74	.74	.74	.66	.60	....
22-22.9	.82	.69	.81	.86	.86	.82	....	.82	.73	.77	.66	.76	.63	....	....	.68	.79	.79	.78	.70	.63	....
23-23.9	.86	.75	.85	.89	.92	.86	$0.71	.86	.78	.82	.71	.81	.67	....	....	.71	.84	.84	.82	.74	.67	....
24-24.9	.90	.80	.90	.93	.97	.90	.77	.89	.82	.86	.75	.85	.72	....	....	.75	.89	.89	.86	.78	.71	....
25-25.9	.95	.86	.94	.96	1.02	.95	.82	.93	.86	.90	.80	.89	.77	....	....	.79	.94	.94	.90	.82	.75	....
26-26.9	.99	.91	.99	1.00	1.08	.99	.88	.96	.90	.94	.84	.94	.82	....	....	.83	.99	.99	.95	....	....	....
27-27.9	1.03	.97	1.03	1.04	....	1.03	.94	1.00	.94	.98	.89	.98	.87	$0.83	$0.92	.87	1.04	1.04	.99	....	....	....
28-28.9	1.07	1.02	1.07	1.07	....	1.07	.99	1.03	.98	....	.93	1.02	.91	.86	.96	.91	1.09	1.09	1.03	....	....	....
29-29.9	1.10	1.07	1.11	1.10	....	1.10	1.04	1.06	1.02	....	.98	1.06	.96	.90	.99	.95	1.14	1.14	1.07	....	....	....
30-30.9	1.14	1.12	1.15	1.14	....	1.14	1.09	1.09	....	....	1.02	1.10	1.01	.94	1.02	.99	1.19	1.19	1.11	....	....	....
31-31.9	....	....	....	1.17		1.17	1.14	Elwood Terrace			1.07	1.14	1.05	.98	1.06	1.02	1.24	1.24				....
32-32.9	....	....	....	1.20		1.20	1.19	F. o. b. ship.			1.11	1.18	1.09	1.02	1.09	1.06	1.29	1.29	Kettleman Hills			....
33-33.9	....	....	....	....		....	1.24	....	$1.21	....	1.15	1.22	1.14	1.06	1.13	1.10	1.34	1.34	....	$1.12	....	....
34-34.9	....	....	....	....		....	1.29	....	1.25	....	1.20	1.26	1.19	1.10	1.16	1.14	....	....	....	1.17	....	....
35-35.9	....	....	....	....		....	1.34	....	1.29	....	1.24	....	1.23	1.14	1.20	....	....	....	....	1.21	....	....
36-36.9	....	....	....	....		....	1.39	....	1.33	....	1.28	....	1.27	1.18	1.23	....	....	....	....	1.25	....	....
37-37.9	....	....	....	....		....	1.44	....	1.37	....	1.33	....	1.31	1.22	1.26	....	....	....	....	1.29	....	....
38-38.9	....	....	....	....		....	1.49	....	....	....	1.37	....	1.36	1.25	1.30	....	....	....	....	1.33	....	....
39-39.9	....	....	....	....		....	1.54	....	....	....	1.42	....	....	1.29	1.34	....	....	....	....	1.38	....	....
40-40.9	....	....	....	....		....	1.59	....	....	....	1.46	....	....	1.33	1.37	....	....	....	....	....	....	....
41-41.9	....	....	....	....		....	....	....	....	....	1.50	....	....	1.37	1.40	....	....	....	....	....	....	....
42-42.9	....	....	....	....		....	....	....	....	....	1.54	....	....	1.41	1.44	....	....	....	....	....	....	....
43-43.9	....	....	....	....		....	....	....	....	....	1.59	....	....	1.45	1.47	....	....	....	....	....	....	....
44-44.9	....	....	....	....		....	....	....	....	....	1.63	....	....	1.49	1.51	....	....	....	....	....	....	....
45-45.9	....	....	....	....		....	....	....	....	....	1.67	....	....	1.53	1.54	....	....	....	....	....	....	....
46-46.9	....	....	....	....		....	....	....	....	....	1.71	....	....	1.57	1.57	....	....	....	....	....	....	....
47-47.9	....	....	....	....		....	....	....	....	....	....	....	....	1.61	....	....	....	....	....	....	....	....
48-48.9	....	....	....	....		....	....	....	....	....	....	....	....	1.64	....	....	....	....	....	....	....	....

FOB Standard Pipeline

*El Segundo prices same as Signal Hill. Wilmington prices same as Signal Hill, except below 19 gravity prices are: 14-16.9, $0.60; 17-17.9, $0.62; 18-18.9, $0.64.
**Includes Newhall, McKittrick, Kern River, Round Mountain and Kern Front, schedule for which ends with 19-19.9. Mountain View schedule begins with 19-19.9.

LOUISIANA-ARKANSAS

Posted by S. O. Louisiana, Oct. 17, '40

Gravity	Bunkie, La. etc.	Caddo, La. etc.	Darrow, La. etc.	University, La. (Baton Rouge)	Atlanta, Ark. etc.
Below 21	....	....	$0.75	$0.91	$0.55
21-21.9	....	....	.77	.93	.57
22-22.9	....	....	.79	.95	.59
23-23.9	....	....	.81	.97	.61
24-24.9	....	....	.83	.99	.63
Below 25	$0.83	$0.73	....	....	....
25-25.9	.85	.75	.85	1.01	.65
26-26.9	.87	.77	.87	1.03	.67
27-27.9	.89	.79	.89	1.05	.69
28-28.9	.91	.81	.91	1.07	.71
29-29.9	.93	.83	.93	1.09	.73
30-30.9	.95	.85	.95	1.11	.75
31-31.9	.97	.87	.97	1.13	.77
32-32.9	.99	.89	.99	1.15	.79
33-33.9	1.01	.91	1.01	1.17	.81
34-34.9	1.03	.93	1.03	1.19	.83
35-35.9	1.04	.94	1.04	1.20	.84
36-36.9	1.05	.95	1.05	1.21	.85
37-37.9	1.06	.96	1.06	1.22	.86
38-38.9	1.07	.97	1.07	1.23	.87
39-39.9	1.08	.98	1.08	1.24	.88
40 & above	1.09	.99	1.09	1.25	.89

Bunkie, La. schedule includes Eola and Olla, La.

Caddo, La. schedule includes De Soto, Homer, Sabine & Sugar Creek, La., Fouke & Miller County, Ark.

Darrow, La. schedule includes, Bayou des Glaise, Bayou Mallet, Choctaw, Jeanerette, Lirette, No. Crowley, Port Barre, Potash, Roanoke & St. Martinville, La.

Atlanta, Ark. schedule includes Buckner, Magnolia, Village & Schuler (Jones Sand Oil), Ark.

Cotton Valley:
Crude..... $1.05
Distillate..... 1.10
Holloway Sand
Crude..... 1.10
Rodessa..... $1.05
Shreveport (Cross Lake)..... 1.05
Smackover (Heavy) .73
Dorcheat, Big Creek, & McKamie (Sour Distillates)..... .95

(Continued in next column)

LOUISIANA-ARKANSAS (Cont'd)

Posted by Shell Oil Co., Inc. (Aug. 29, '39)
Iowa District, La.

Below 18	$0.75	23-23.9	$0.89	29-29.9	$1.04	
18-18.9	.77	24-24.9	.92	30-30.9	1.06	
19-19.9	.79	25-25.9	.95	31-31.9	1.08	
20-20.9	.81	26-26.9	.98	32-32.9	1.10	
21-21.9	.83	27-27.9	1.00	33-33.9	1.12	
22-22.9	.86	28-28.9	1.02	34 & above	1.14	

Black Bayou & White Castle Districts, La.—same as Iowa District, except Black Bayou, etc. begins with Below 20 at $0.79.

Gibson Field, Terrebonne Parish, La.....$1.04
Happytown Field, St. Martin, Parish, La.
(Jan. 12, '40)..... 1.00

Posted by Arkansas Fuel Oil Corp.
Urania, La. (Oct. 14, '38).....$0.89

Posted by Continental Oil Co.
Tepetate & Ville Platte, La. (Oct. 11, '38)....$1.03

Abbeville, La. (Jan. 1, '39)

Below 36	$0.92	37-37.9	$0.96	39-39.9	$1.00
36-36.9	.94	38-38.9	.98	40 & above	1.02

Posted by Caddo Crude Oil Purchasing Corp.
Allison area, Shrv'prt. field (Aug. 14, '39).....$0.95

Lisbon, N. La. (Sept. 14, '39)

27-27.9	$0.66	30-30.9	$0.72	33-33.9	$0.78
28-28.9	.68	31-31.9	.74	34-34.9	.80
29-29.9	.70	32-32.9	.76	35 & above	.82

CANADIAN FIELDS

Posted by Imperial Oil Limited
Western Ontario (Nov. 6, 1939)

Petrolia.....$2.10 Oil Springs.....$2.17

Turner Valley (Prices FOB producer's tankage) Crude Oil (Sept. 12, 1940)

33-33.9	$1.08	44-44.9	$1.30	55-55.9	$1.52
34-34.9	1.10	45-45.9	1.32	56-56.9	1.54
35-35.9	1.12	46-46.9	1.34	57-57.9	1.56
36-36.9	1.14	47-47.9	1.36	58-58.9	1.58
37-37.9	1.16	48-48.9	1.38	59-59.9	1.60
38-38.9	1.18	49-49.9	1.40	60-60.9	1.62
39-39.9	1.20	50-50.9	1.42	61-61.9	1.64
40-40.9	1.22	51-51.9	1.44	62-62.9	1.66
41-41.9	1.24	52-52.9	1.46	63-63.9	1.68
42-42.9	1.26	53-53.9	1.48	64 & over	1.70
43-43.9	1.28	54-54.9	1.50		

Absorption Gasoline (Jan. 5, 1938)

90% Rec., 20 lb. Reid v.p.....$1.94
90% Rec., 17 lb. Reid v.p.....$2.08

ROCKY MOUNTAIN FIELDS

Posted by Stanolind Oil & Gas Co. (Oct. 11, '38)

Salt Creek (except Tensleep crude), Midway and Dutton Creek, Wyo., same schedule as S. O. Indiana posts in Okla.-Kans., ranging from $0.86 to $1.10, which see in next column.

Tensleep crude....$0.646
Hes, heavy..... .92
Elk Basin, light.... .90
Grass Creek, light. .90
Frannie, light.....$0.55
Grass Creek, heavy .40
Hamilton Dome, Wyo..... .35
Frannie, heavy..... .42

Posted by Ohio Oil Co. (Oct. 11, '38)

Elk Basin, Wyo.. $0.90
Grass Creek, light. .90
Rock Creek.....$1.00
Lance Creek..... .77
Dry Creek, Mont..... .92
Grass Creek, heavy (April 1, '39)..... .40
Sunburst, Mont. (Nov. 16, '37)..... .90

Posted by Continental Oil Co. (Oct. 11, '38)
Ft. Collins & Wellington, Col.

Below 29.	$0.81	32-32.9..	$0.89	36-36.9..	$0.97
29-29.9..	.83	33-33.9..	.91	37-37.9..	.99
30-30.9..	.85	34-34.9..	.93	38-38.9..	1.01
31-31.9..	.87	35-35.9..	.95	39-39.9..	1.03
				40 & above	1.05

Canon City & Florence, Col.....$0.90
Cat Creek, Mont.. 1.10
Big Muddy, Wyo..$0.98
Lance Creek, Wyo. 0.77

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ADVERTISERS' INDEX

This index is published as a convenience to the reader. Every care is taken to make it accurate, but National Petroleum News assumes no responsibility for errors or omissions.

Acheson Colloids Corp.
Alemite Corp. 27
American Can Co.
American Flange & Mfg. Co.
American Grease Stick Co.
American Telephone & Telegraph Co.

Badger & Sons Co., E. B.
Benjamin Electric Co.
Berry Sons' Co., James B.
Bowser & Co., S. F.
Bradford Oil Refining Co.
Brodie Co., Inc., Ralph N. Inside Front Cover
Buckeye Iron & Brass Works
Butler Manufacturing Co.

Canfield Oil Co.
Champion Spark Plug Co.
Champlin Refining Co.
Chek-Chart Corp.
Chevrolet Motor Division, General Motors Sales Corp.
Chicago Bridge & Iron Co.
Chicksan Oil Tool Co., Ltd.
Cincinnati Advertising Products Co. Pump Globe Division
Cincinnati Mfg. Co.
Cities Service Oil Co. 10
Columbian Steel Tank Co.
Continental Can Co.
Crown Can Co.
Curtis Pneumatic Machinery Co.

Davidson Enamel Products, Inc.
Davidson Porcelain Enamel
Davis Welding & Mfg. Co.
Deep Rock Oil Corp. Outside Back Cover
Delco Products
Delco-Remy
Dodge Division (Chrysler Motors)
Dykem Co.
Du Pont de Nemours & Co., E. I.

Econo-vent Corp.
Erie Meter Systems, Inc.
Ethyl Gasoline Corp.

Farrell Mfg. Co.
Fleet-Wing Corp.
Ford Motor Co.
Freedom Oil Co.
Fruehauf Trailer Co. 8

General American Transportation Corp. 46
General Electric Co.
General Motors Truck & Coach Division
Giant Tire & Rubber Co.
Gilbert & Barker Mfg. Co.
Goodrich Co., B. F.
Goodyear Tire & Rubber Co.
Granberg Equipment, Inc.
Graver Tank & Mfg. Co.
Great Lakes Steel Corp. 33
Gulf Oil Corp. 41

Heil Co., The
Humble Oil & Refining Co. 2, 3,

Industrial Oil Corp.
International Harvester Co.
International Metal Hose

Johnson-Williams, Ltd.

Kellogg Div. of American Brake Shoe & Foundry Co.
Kidde, Walter & Co., Inc. 37

Leland Electric Co. Inside Back Cover

Mack Trucks, Inc.
McDonald Mfg. Co., A. Y.
Master Electric Co.
Mixing Equipment Co., Inc.
Morrison Bros.
Morton Salt

Nash-Kelvinator Corp. 22
National Petroleum News 6
National Pumps Corp.
National Refining Co. 4
Neptune Meter Co.
New York Lubricating Co.

Ohio Oil Co.
Oil Equipment Mfg. Co.
Oniwon Toilet Seat Covers, (A.P.W. Paper Co. Inc.)
Overhead Door Corp.

Paraflow 29
Pennsylvania Grade Crude
Pennsylvania Petroleum Products
Philadelphia Valve Co.
Phillips Petroleum Co.
Pittsburgh Equitable Meter Co. 1
Pump & Meter Mfg. Co., The
Pure Oil Co.

Quaker State Oil Refining Co.

Reeves Brothers, Inc.
Republic Oil Co.
Roper Corp., Geo. D.

Sani-Flush (The Hygienic Products Co.) 45
Scully Signal Co.
Service Station Equipment Co.
Shell Oil Co., Inc. 7
Sinclair Refg. Co., Inc.
Smith Meter Co.
Socony-Vacuum Oil Co.
Southwest Pump Co.
Standard Oil Co. (Indiana)
Standard Steel Works
Stewart-Warner Corp.
Sun Oil Co.

Texaco Development Corp.
Thornton Tandem Co.
Tidewater Associated Oil Co.
Tokheim Oil Tank Co.

Universal Oil Products Co. 19

Viking Pump Co.

Wayne Pump Co.
Westinghouse Electric & Mfg. Co.
Wheeling Corrugating Co.
White Motor Co.
Witte Engine Works

· PERSONALS ·

The only thing that now stands between **Reid W. Bond,** Tulsa and a private pilot's license is the solo flight. And that test will be taken as soon as the weather clears and he can find time from his duties as division production manager for Shell Oil Co., Inc. Mr. Bond owns a "Piper Cub" plane, and has passed his written test for the license with flying colors.

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Petroleum Solvents Corp., New York, has announced that **Sid G. Harris** has joined the company as manager of the sales engineering dept., fleet-industrial-marine division. Mr. Harris was formerly factory representative for Pines Winterfront Co., sales engineer for MacMillan Petroleum Corp., and eastern representative for Continental Motors Corp He is a member of the Society of Automotive Engineers, and a past chairman of the Metropolitan Section, of S.A.E.

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Eugene Orvis, who for 28 years has served in several departments in Socony-Vacuum's Albany Division headquarters, announced his retirement as Albany Division Manager. His work will be taken over temporarily by **J. M. Martin,** Division Manager of the New England Division.

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Frank P. Denton, formerly assistant to the sales promotion and advertising manager of Packard Motor Car Co. of New York, has joined Regal Oil Co., Elizabeth, N. J., where he will be in charge of advertising and sales promotion for Regal's 60-odd leased stations and other dealer outlets in Northern New Jersey.

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Tired of the usual tour of inspection of the closest refinery to its convention city, **Robert W. Hadlick,** Jefferson City, Mo., executive secretary of Missouri Independent Oil Jobbers Assn. is circulating a questionnaire, asking members if they'd like to inspect a large St. Louis brewery. The inspection tour of the brewery will be scheduled some time during the association's fourth annual convention at St. Louis Nov. 27 and 28.

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The anniversary of the birth of the Texas oil industry, celebrated recently at Fort Worth, by the Texas Mid-Continent Oil & Gas Assn., brings to mind many of Texas' pioneer "petroleocrats."

The "Hamill Boys" loom big in the recollection picture of Texas' pioneer oil industry. They played an important part in drilling up the discovery field at Corsicana, drilled in the Spindletop, Tex. discovery well. **A. W. Hamill** lives in Tulsa, **J. G. Hamill** in Fort Worth and **Curt G. Hamill** in San Antonio. Curt was the first to use mud in drilling oil wells, stampeding cattle herds in the water pit to obtain the desired mud consistency.

Drilling for water, **Charles Rittersbacher, H. G. Johnston** and **Elmer Akins** of American Well & Prospecting Co., discovered the first show of oil in the Corsicana "water well" at a depth of 1027 ft. Today the American Well & Prospecting Co. is officered by the two sons of Charles Rittersbacher.

Perhaps the oldest continuous producer of Texas crudes is **C. D. Speed** of Corsicana, who on Sept. 28, this year, entered his 42nd year as a producer of Lone Star State crude.

W. C. Ralston of Corsicana did volunteer work in excavation for the first still of Texas' first commercial oil refinery. He helped fire that first still, Christmas Day, 1898 and later became superintendent of that same refinery. He is now retired.

Texas' first commercial oil well was completed at Corsicana Oct., 1895 and was drilled by Corsicana Oil Development Co., organized by **Ralph Beaton** and **H. G. Damon** of Corsicana and **John Davidson,** Pennsylvania oil man. Memories of Mr. Davidson were vividly recalled when his son participated in the activities commemorating the oil discovery.

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Following his resignation as director of Sinclair-Prairie Oil Co., **Allen Whiteside,** Tulsa, has accepted a position as executive director of the Fields Foundation, a national organization engaged in rehabilitating deserving paroled and discharged inmates of penal institutions. Mr. Whiteside had been with the Sinclair-Prairie company nearly 24 years. "I'm confident," he said, "that no person was ever more in need of assistance than the worthy individual recently released from prison."

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Roy Reed, Arkansas City, Kans. is back on the job now directing Kanotex Refining Co.'s asphalt department after several months absence. The 17-year man with Kanotex, suffered a slight illness, but is back on the job fit as ever.

E. H. Webb, Wichita, Kans., field representative of Kansas Oil Mens Assn., is back on the job following a serious automobile accident that kept him confined to hospital and home for 2 months.

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Edward M. Borger, 39-year-old president of the Peoples Natural Gas Co., Pittsburgh, was elected to this position last week, succeeding **J. French Robinson** who resigned to become president of the East Ohio Gas Co., Cleveland. Both of these gas companies are subsidiaries of Standard Oil Co. of New Jersey.

Mr. Borger was employed by the Peoples Natural Gas Co. and affiliated companies in 1922, following graduation from Duquesne. Mr. Robinson received his Master of Science degree at West Virginia University in 1918 and the following year became geologist and engineer for the Seneca Hill Oil Co. In 1921, he joined the Peoples Natural Gas Co.

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Charles A. Miller, Houston, of The Texas Co., who heads the Petroleum Section of the National Safety Council, has been elected to the 7-man executive committee which runs the council's affairs. Mr. Miller is also regional chairman of the U. S. Labor Department's industrial safety work among government contractors.

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Norman C. Cross, Tulsa, secretary and treasurer of Superior Oil Corp., was recently elected president of the Petroleum Accountants Society of Oklahoma.

Other officers elected for the coming year were. **B. E. Witchell,** Bartlesville, Phillips Petroleum Co., first vice-president; **A. W. John,** Tulsa, Tidewater Associated Oil Co., second vice-president; and **F. T. Anderson,** Tulsa, Darby Petroleum Co., secretary-treasurer.

Newly elected directors are Mr. Anderson, **J. B. Bass,** Ponca City, Continental Oil Co. and **Virgil Marshall,** Tulsa, Skelly Oil Co. **R. B. Hansen** of Tulsa, Stanolind Oil & Gas Co., is retiring president.

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A new member of the Hughes Oil Co., Chicago, is **John A. Stumpf.** Mr. Stumpf has been active in the oil business for 33 years.